





# Electronic Data Deliverable (EDD)

Specification Manual

Version 1.05



U.S. Environmental Protection Agency  
Region 5, 77 West Jackson Boulevard

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## EXECUTIVE SUMMARY

The purpose of this document is to provide detailed instructions for the reporting of environmental data generated by site characterization and investigation, installation of monitoring wells, and continued sampling at a site. It describes the Electronic Data Deliverable (EDD) - a combination of requirements and procedures for reporting data in electronic files after each phase of environmental investigation and throughout the site remediation and monitoring process. In this section, a summary is provided to allow managers to understand and guide the process. EPA's goal in defining an EDD is to expedite the transfer of data from the US EPA data providers. Other programs employing this approach have realized significant time and cost savings. The reason this approach is efficient is that it allows the US EPA data providers to fully understand EPA requirements and to communicate these requirements to its employees and contractors. All data can be compiled into the EDD throughout the Monitoring Program and therefore not add a separate data management task once all data have been collected.

The EDD is comprised of three distinct sets of files: Initial, Chemistry, and Geology. The Initial EDD consists of a CAD site drawing and two files containing data pertaining to the site and the sampling locations within a site. Most of the data submitted over the life of the project will be chemistry data. The Chemistry EDD files contain, field measurement, sample, test/result, and water level information. The Geology EDD files contain data regarding drilling activities, lithology, geologic sampling, well construction, down hole point data, and groundwater levels. Figures E-1 and E-2 show the EDD creation process for chemistry and geology respectively.

As shown in Figures E-1 and E-2, the process of creating the EDD files begins with software selection. Many software tools are capable of creating the EDD files including text editors, word processors, spreadsheets, and databases. However, spreadsheets and databases are designed to enter and manage data and are really the best tools to use. Microsoft® Access and Excel users can use the files contained on EPA Region 5's ED MAN website located at <http://www.epa.gov/region5superfund/edman>, that are already formatted and ready for data entry. Users of other software can convert the Excel or Access files or can define the EDD in the software of their choice. The production of the data tables will normally be a collaborative effort between laboratories and environmental contractors. The laboratories will typically produce the test/results tables while the contractors normally will produce all of the other tables.

After the software has been selected the data entry process begins. As shown in Figures E-1 and E-2, there are several decision points that exist to prevent redundant chemistry data reporting. For example, the data describing a site and the site contact should only be reported once. When creating the EDD ask, "Has the site ever been reported?" If the answer is yes, then no site file should be reported with the EDD. If the answer is no, then this must be the first EDD reported for that site and therefore the site file should be reported. A similar decision process is followed for locations. Locations only need to be reported once for any site. The only time a location is reported more than once is if the data have changed in some way. For example, the location may have been resurveyed. Sample, test, and results data constitute the bulk of EDD submissions. While it is rare, it is possible that tests and results are being reported for a sample(s) that was part of an earlier EDD sample file. In this case, the sample data should

not be reported again. The Test/Results file should contain new data only. If data are being resubmitted, this must be clearly documented in a cover letter to assure that outdated information is removed from the database. The final step before submitting the EDD files is to check them using the “Electronic Laboratory Data Checker” (ELDC) and the “Electronic Field Data Checker” (EFDC) software that is provided on the EDMAN website. This software will uncover errors in the EDD files that must be corrected prior to submission.

EPA Region 5 is providing a technical help line to assist the US EPA data providers in understanding and using the EDD. Both phone and email support are available. Please see Section 6 of this document for technical support information. Additionally, a US EPA Region 5 ED MAN website has been created. The address is <http://www.epa.gov/region5superfund/edman> <<http://www.epa.gov/region5superfund/edman>>. A copy of the EDD, valid values, ELDC, and EFDC will be available for download.

**Figure E-1. Process flow diagram for the creation and checking of chemistry EDD files**

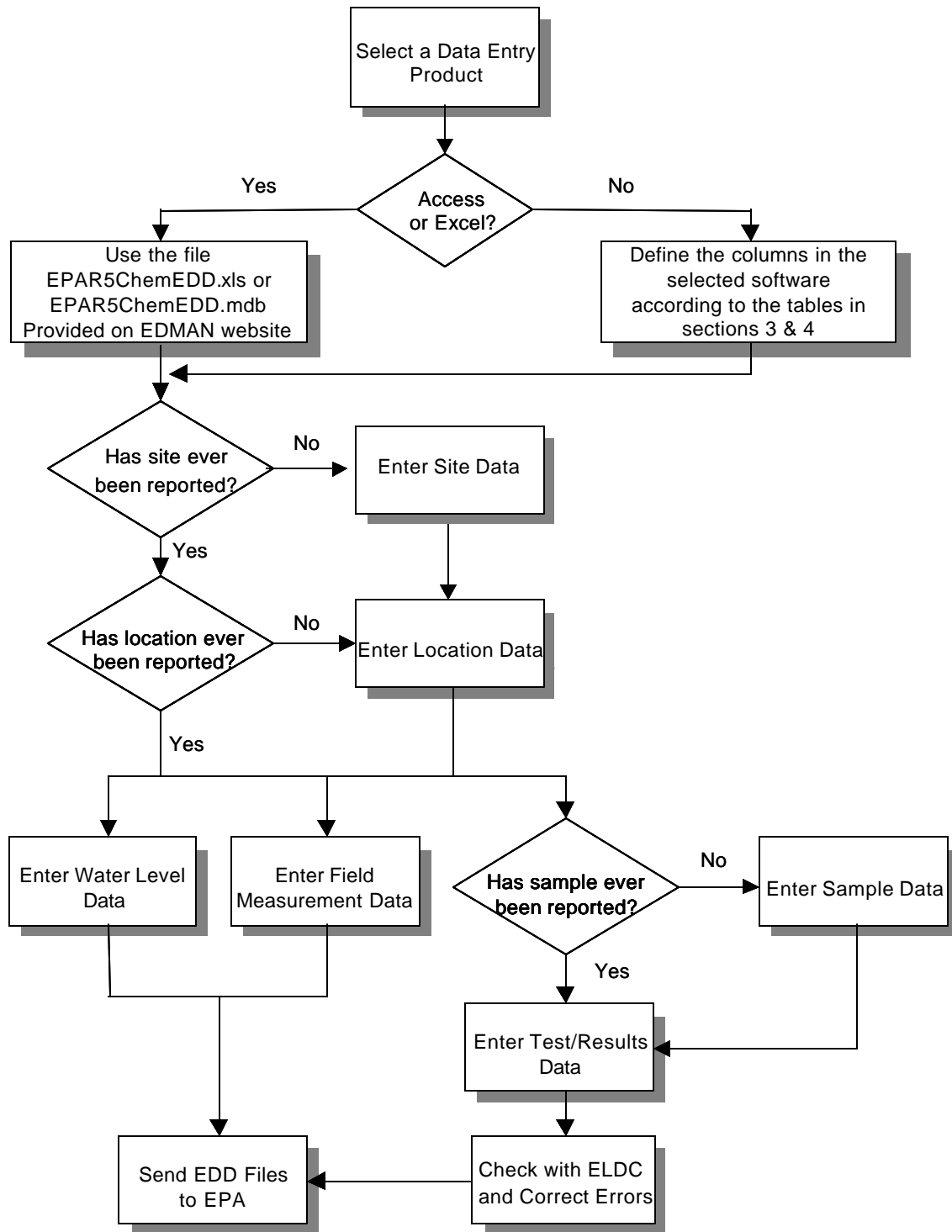
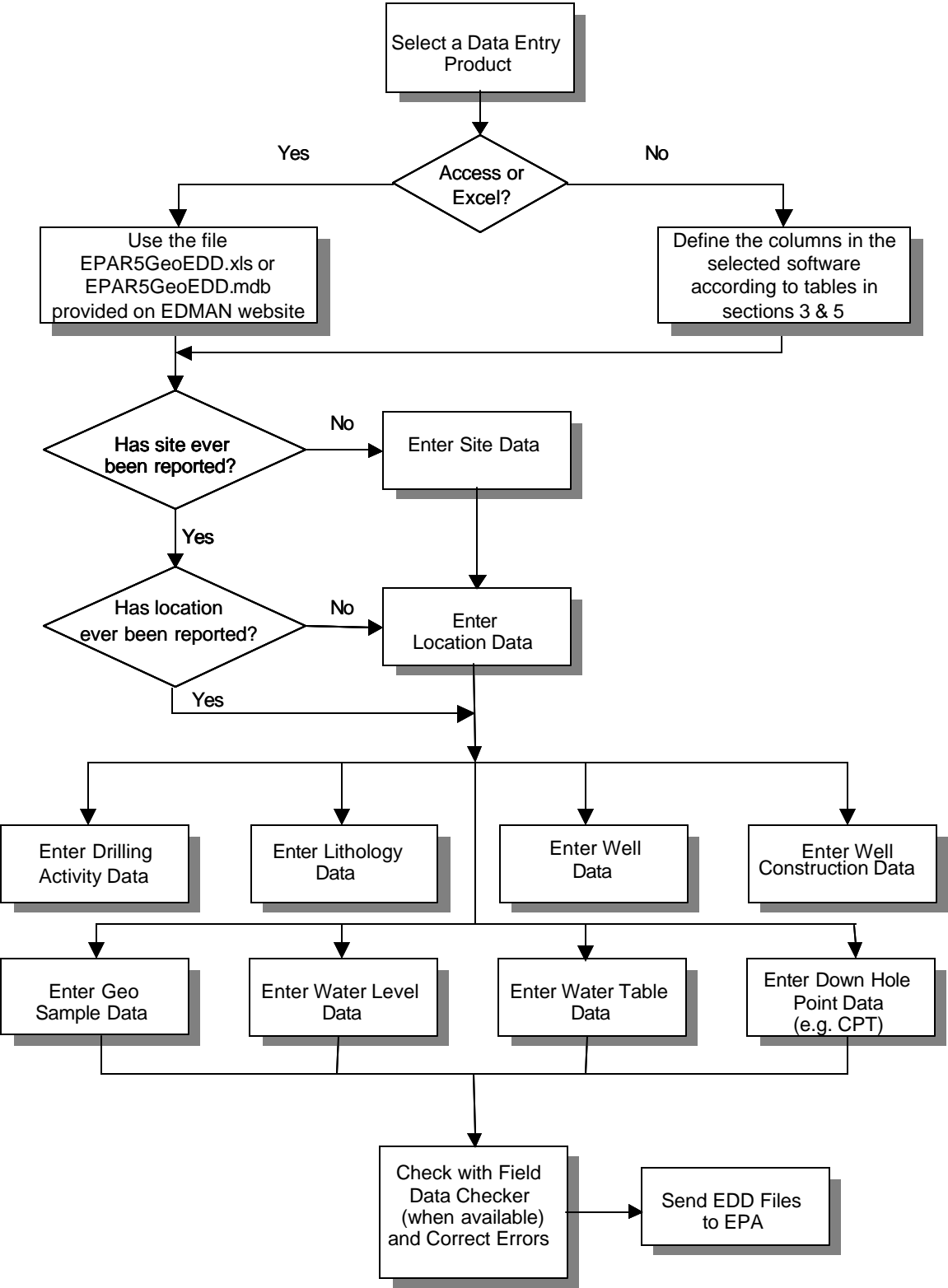




Figure E-2. Process flow diagram for the creation and checking of geology EDD files



## **1. INTRODUCTION TO THE ELECTRONIC DATA DELIVERABLE (EDD)**

EPA Region 5 has developed the Environmental Data Management and Analysis Network (ED MAN) system to improve how environmental data from Superfund sites are acquired and managed. The ED MAN system provides multiple solutions for visually displaying site characteristics, measuring remediation progress, and confirming compliance status. The results of ED MAN will be to accelerate the review of environmental data submissions, improve service to the regulated community, and enhance the protection of the environment and the public. A vital element to the successful deployment of the ED MAN system is the electronic transfer of environmental data from the data providers to EPA in a standardized format. This EDD was developed to facilitate that transfer of data from data providers to the EPA.

The EDD is based on standard EQuIS<sup>®</sup> EDDs from EarthSoft Inc. The format is designed to be software-independent and easy to achieve. Any spreadsheet, database, or text editor can be used to create the EDD files. Examples of these applications include Access, FoxPro<sup>®</sup>, Excel, Quattro<sup>®</sup>, Lotus<sup>®</sup> 1-2-3<sup>®</sup>, and Notepad.

Basically, the EDD is a series of file structures that is used to report data. For example, one file structure is used to report location data while another is used to report samples collected at a location. Multiple files are used to eliminate the need to report redundant data. For example, the data (coordinates, elevation, etc.) for a location are reported once in the location file. Many years of data may be reported for that location without reporting the location information again.

This document includes examples that illustrate how the EDD files should look after loading your data into them. In addition, several templates have been provided on the ED MAN website: <<http://www.epa.gov/region5superfund/edman>> for loading data into the EDD format and 2 software programs, Electronic Lab Data Checker (ELDC) and Electronic Field Data Checker (EFDC), are provided to check your EDD files before reporting.

The EDD is discussed in five separate sections:

General reporting requirements are discussed in Section 2.

The initial site and location file structures are defined in Section 3. These files must be submitted prior to, or in conjunction with, the first Chemistry or Geology EDD submittals.

The Chemistry file structures are defined in Section 4. Chemistry data accounts for the majority of reportable data for this program.

The Geology file structures are defined in Section 5.

Finally, the appendix contains information on valid values and provides a listing of facility IDs for Superfund sites within EPA Region 5.

Each file must be reported exactly as defined in these sections. Any deviations will result in loading errors.

US EPA expects all fields with either “Required” or “If available” to be completed. The data type “Required” only refers to the need of the data in order to load data into the database. There may be data types of “If available” or “If applicable” where the data are not available or

applicable. In these cases, include in the cover letter to the Region 5 RPM a description of any fields that are not available or not applicable and the reason why. The data types of “Not wanted” should not be reported. These data types were only included so that other EPA regions or states could use the same EDD but have slightly different data type requirements.

## 2. REPORTING REQUIREMENTS FOR EDD

### 2.1 File Formats

With the exception of the electronic base map, all data from the US EPA data providers must be reported as text files using the following standard formats. Each data field must be separated by tabs (tab delimited) or comma delimited (CSV) optionally enclosed in double quotes ("). Data fields containing no information may be represented by two tabs (see example below on Null Format, Section 2.7) or two commas. Maximum length of text fields is indicated in parentheses within the EDD tables shown in Sections 3, 4, and 5. If the information is less than the maximum length, do not pad the record with spaces. Each record (line of information) must be terminated with a carriage return/line feed (created by pressing the enter key in a text editor). Guidance on creating these text files can be found in Section 2.14.

Chemistry and geology data are submitted from the US EPA Data providers in a series of files. Multiple files are used to eliminate the need to report redundant data. Details of the formats for the initial, chemistry, and geology files are presented in Sections 3, 4, and 5, respectively. Table 2-1, Table 2-2, and Table 2-3 provide an introduction to the files that comprise the Initial EDD, Chemical EDD, and Geology EDD, respectively.

An electronic base map must also be submitted along with the initial site and location files. The site base map must be a CAD file in DXF interchange format. Further details regarding the base map are given in Section 3.

**Table 2-1. General information on the files that comprise the Initial EDD**

File Type	File Name	Created By	Contents	What
<b>makes a row of data unique?      Dependence of other files on these data</b>				
Base Map	SiteName.DXF	US EPA data provider	Base Map of Site	Not
Applicable      Not Applicable.				
Site	SiteNameDate. EPAID. EPAR5SITE_v1. txt (or csv)	US EPA data provider	One time definition of site including US EPA data providers data contact information.      site_code      The location file cannot be loaded without properly referenced sites (site_code).	
Location	SiteNameDate. EPAID. EPAR5LOC_v1. txt (or csv)	US EPA data provider's surveyor	One entry for each location on a study site. Contains elevation, coordinate and general data. Data should only be reported once for a location.      sys_loc_code      Samples, water levels, and field measurements can only be reported for locations that are defined in this file.	

**Table 2-2. General information on the files that comprise the Chemistry EDD**

File Type	File Name	Created By	Contents	What
<b>makes a row of data unique?      Dependence of other files on these data</b>				
Chemistry Field Measure-ment	SiteNameDate. EPAID. EPAR5CFM_v1. txt (or csv)	US EPA data provider's field sampling team(s).	Measurements taken in field	

and not associated with a sample (e.g. air temperature). table\_name sys\_code  
param\_code measurement\_date None.

Chemistry Sample	SiteNameDate. EPAID. EPAR5SMP_v1. txt (or csv)
------------------	--

US EPA data provider's field sampling team(s). One row for each sample  
collected at the study site. sys\_sample\_code Tests/results and batch data  
can only be reported for samples that are defined in this file.

Chemistry Test/ Result	SiteNameDate. EPAID. EPAR5TRS_v1. txt (or csv)
------------------------	--

US EPA data provider's testing lab(s) One row for each analyte  
reported for a given sample and test. Additional rows can be added to report total and dissolved  
results and to report results for re-extracts. sys\_sample\_code lab\_anl\_method\_name  
total\_or\_dissolved test\_type cas\_rn analysis\_date analysis\_time None.

ChemistryTest/ Result with QC Data (use only if QC data are submitted)	
--	--

SiteNameDate. EPAID. EPAR5TRSQC\_v1. txt (or csv) EPA  
contractor lab(s) Test/Result file with additional fields for QC data.  
sys\_sample\_code lab\_anl\_method\_name total\_or\_dissolved test\_type cas\_rn  
analysis\_date analysis\_time None

**Table 2-2. General information on the files that comprise the Chemistry EDD**

(continued)

File Type	File Name	Created By	Contents	What
<b>makes a row of data unique?</b>		<b>Dependence of other files on these data</b>		
Batch (use only if QC data are required) (or csv)	EPA contractor lab(s)	SiteNameDate.	EPAID. EPAR5BAT_v1. txt	
	sys_sample_code lab_anl_method_name test_batch_id			None.
Water Level		SiteNameDate.	EPAID. EPAR5GWTR_v1. txt (or csv)	
	US EPA data provider's field sampling team(s)			Groundwater level data for monitoring wells
	sys_loc_code sys_well_code measurement_date			
	measurement_time sequence			None.

**Table 2-3. General information on the files that comprise the Geology EDD**

File Type	File Name	Created By	Contents	
<b>What makes a row of data unique?</b>		<b>Dependence of other files on these data</b>		
Drilling Activity		SiteNameDate.	EPAID. EPAR5DRA_v1. txt (or csv)	US
	EPA data provider's Geologist			General Information regarding soil borings
	sys_loc_code event			None.
Lithology		SiteNameDate.	EPAID. EPAR5LTH_v1. txt (or csv)	US EPA data provider's
	Geologist			Lithology data for a borehole.
	sys_loc_code start_depth			
				None.
Well		SiteNameDate.	EPAID. EPAR5WEL_v1. txt (or csv)	US EPA data provider's
	Geologist			general information regarding wells
	sys_well_code			sys_loc_code
				Well Construction and Water Level data can only be reported for wells that are defined in this file.

**Table 2-3. General information on the files that comprise the Geology EDD (continued)**

File Type	File Name	Created By	Contents	
<b>What makes a row of data unique?</b>		<b>Dependence of other files on these data</b>		
Well Construction	SiteNameDate. EPAID. EPAR5W	SG_v1. txt (or csv)	US	
EPA data provider's Geologist	Well construction details recorded during well construction.			
	sys_loc_code sys_well_code segment_type start_depth material_type_code	None.		
Geology Samples	SiteNameDate. EPAID. EPAR5G	SMP_v1. txt (or csv)		
US EPA data provider's Geologist	Results for geological, physical properties of samples.			
	geo_sample_code	None.		
Water Level	SiteNameDate. EPAID. EPAR5G	WTR_v1. txt (or csv)		US
EPA data provider's field sampling team(s)	Groundwater level data for monitoring wells			
	sys_loc_code sys_well_code measurement_date measurement_time sequence	None.		
Water Table	SiteNameDate. EPAID. EPAR5T	TBL_v1. txt (or csv)	US EPA data provider's	
Geologist	General Information pertaining to water table		sys_loc_code type	
	None.			
Down Hole Point (CPT) Data	SiteNameDate. EPAID. EPAR5D	HP_v1. txt (or csv)	US	
EPA data provider's Geologist	Results of all down hole logging such as CPT, resistivity, or other geophysical logs.			
	sys_loc_code depth param	None.		

## • 2.2 Initial Data Submittals

The initial data submittal consists of a site base map and two data files: Site File and Location File. Initial submittals provide information pertaining to the monitoring site and sampling locations within the site. The base map, Site file, and Location file need only be submitted once at the beginning of the project and resubmitted only when changes occur. Examples of changes that would require resubmittal include a change in the site contact or locations being resurveyed. New sampling locations established after the initial Location file submittal requires a new submittal with data only pertaining to the new locations. Instructions for submitting your EDDs to EPA are presented in Section 2.16 Submitting Your EDD to EPA.

## • 2.3 Chemistry Data Submittals

There are two (2) types of Chemistry data submittals: Recurring and Correction.

- Recurring submittals are submitted on a cyclic basis and should include the files: Field Measurement, Chemistry Sample, Test/Results, Batch (if required), and Water Level. Data should not be reported for laboratory generated quality control samples but should be reported for field duplicates, field blank, field spike, and trip blanks.
- Correction Reports are those files submitted to correct previously submitted reports. Laboratory retests should be reported as discussed in Section 2.10.

Instructions for submitting your EDDs to EPA are presented in Section 2.16 Submitting Your

EDD to EPA.

## **- 2.4 Geology Data Submittals**

Sites reporting data from monitoring wells installed more than one year prior to the date of data submittal are not required to submit any of the Geology tables. However, for all newly installed monitoring wells (i.e., wells installed within one year from the date of data submittal), and monitoring wells installed in the future, data providers must submit all applicable Geology files as detailed in Section 5. All applicable Geology files must also be submitted for data collected via direct push sampling (e.g., cone penetrometer).

There are two (2) types of Geology data submittals: Original and Correction.

- Original submittals consist of Geology data obtained during subsurface investigations at the site. The original Geology submittal should consist of all Geology files if the data are available. Unlike the Chemistry EDD submittals which are submitted on a cyclic basis, in most cases the Geology EDD is submitted only once. An additional Geology EDD is submitted only if new geology data is obtained after the original EDD was submitted to the EPA.
- Correction submittals are those files submitted to correct errors from previously submitted EDDs.

Instructions on submitting your EDDs to EPA are presented in Section 2.16 Submitting Your EDD to EPA.

## **- 2.5 File Naming Convention**

Each file, except the base map file, must be named according to the following convention:

SiteNameDate.EPAIDCode.EDD File Format.txt (or .csv)

For example, the fourth quarter ground water sampling for 1999 at the ABC site, EPA Site XYZ123456789 would be reported in a file named ABC20000219.XYZ123456789.EPAR5SMP\_v1.txt (or .csv). The first part of the file name is the site name and submission date in YYYYMMDD format. The second part of the file name is the 12 character alphanumeric EPA ID for the facility under investigation. EPA IDs for EPA Region 5 sites are provided in Appendix A.1. The third part of the file name refers to the EDD file format for the file being submitted. In the above example, the Chemistry sample file is being submitted, therefore the EDD File format is EPAR5SMP\_v1. The last part is an extension that will be either “txt” if the file was saved as tab delimited or “csv” if saved as comma delimited. Table 2-4 describes the naming formats and submission type for the Initial, Chemistry and Geology files.

**Table 2-4. EDD file name formats**

File Type	File Contents	EDD File Name	
<b>Submission Type</b>			
Initial	Base Map	Sitename.DXF	Initial
Initial	Site	SiteNameDate.EPAIDCode.EPAR5SITE_v1.txt	Initial
Initial	Location	SiteNameDate.EPAIDCode.EPAR5LOC_v1.txt	Initial
Chemistry	Field Measurements		
		SiteNameDate.EPAIDCode.EPAR5CFM_v1.txt	
		Recurring	
Chemistry	Sample	SiteNameDate.EPAIDCode.EPAR5SMP_v1.txt	
		Recurring	
Chemistry	Test/Results	SiteNameDate.EPAIDCode.EPAR5TRS_v1.txt	
		Recurring	
Chemistry	Test/Results QC	SiteNameDate.EPAIDCode.EPAR5TRSQC_v1.txt	
		Recurring	
Chemistry	Batch	SiteNameDate.EPAIDCode.EPAR5BAT_v1.txt	
		Recurring	
Chemistry	Water Level	SiteNameDate.EPAIDCode.EPAR5GWTR_v1.txt	
		Recurring	
Geology	Drill Activity	SiteNameDate.EPAIDCode.EPAR5DRA_v1.txt	
		Original	
Geology	Lithology	SiteNameDate.EPAIDCode.EPAR5LTH_v1.txt	
		Original	
Geology	Well	SiteNameDate.EPAIDCode.EPAR5WEL_v1.txt	
		Original	
Geology	Well Construction		
		SiteNameDate.EPAIDCode.EPAR5WSG_v1.txt	
		Original	
Geology	Geology Samples		
		SiteNameDate.EPAIDCode.EPAR5GSMP_v1.txt	
		Original	
Geology	Water Level	SiteNameDate.EPAIDCode.EPAR5GWTR_v1.txt	
		Original	
Geology	Water Table	SiteNameDate.EPAIDCode.EPAR5TBL_v1.txt	
		Original	
Geology	Down Hole Point (CPT) Data		
		SiteNameDate.EPAIDCode.EPAR5DHP_v1.txt	
		Original	

## • **2.6 Data Integrity Rules**

Data submitters are responsible for running three types of integrity checks on their data.

**Validity:** All codes used in a data set must be valid. Valid values for all coded fields are either provided in the description columns of the tables in Sections 3, 4, and 5 or, for more

extensive lists, provided in the appendix. For example, the sample matrix is sample\_matrix\_code field of the sample file and must be reported using one of the values provided in Appendix A.13.

**Row Uniqueness** must be verified using the guidance provided in Tables 2-1, 2-2, and 2-3. Row uniqueness is assured when no two rows in a file contain the same values for the columns listed under the heading “What makes a row of data unique?” In database terminology this is called a primary key. For example, no two rows in the sample file can contain the same sys\_sample\_code (commonly called a sample identifier). In addition, no two rows ever reported for a single site can contain the same sys\_sample\_code. The sys\_sample\_code must be unique for a site. This is also true of the sys\_loc\_code (code used to identify a location e.g. MW01) in the Location table. As previously mentioned, it is anticipated that the location(s) will be reported early in the program and that information about each location including water levels and samples collected will be reported throughout the program. In this case, a row for each sys\_loc\_code should only be reported in the Location file with the first data submission and not with subsequent submissions.

**Figure 2-1. Relationships between chemistry file data structures.**

Note that the field measurement table is not shown because its relationship depends on the type of measurement taken.

Shaded fields are required to have data

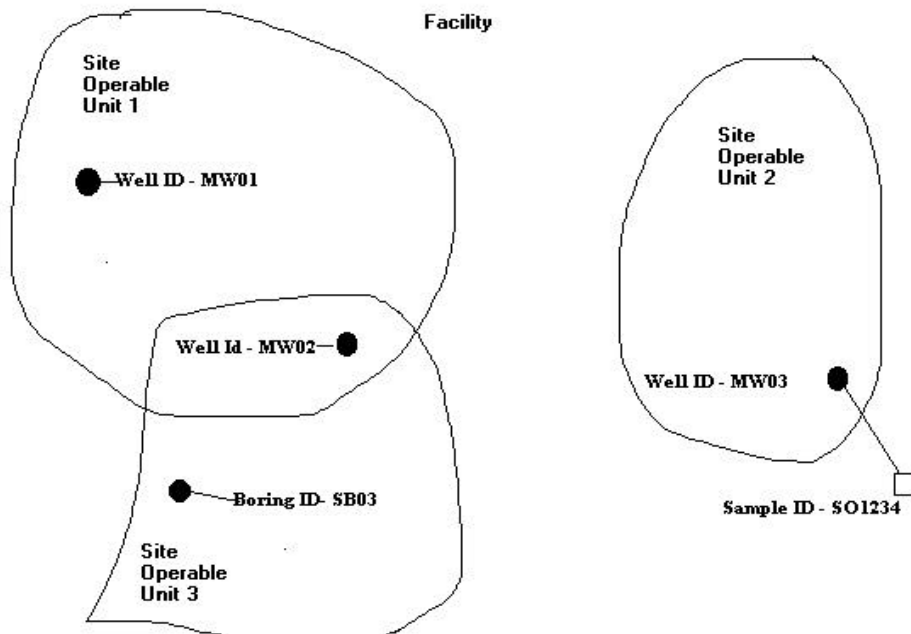


- **Row Integrity:** The relationship between rows within the files of the EDD must be assured by enforcing the “referential integrity” rules discussed in Tables 2-1, 2-2, and 2-3 under the column labeled “Dependence of other files on these data.” For example, the values of sys\_sample\_code present in the Test/Result file must also be present in the Sample file. Logical relationships between the Chemistry files are shown in Figure 2-1 above. The line between files shows which column (or columns) is used to relate the two. The side with the “1” at the end of the line contains one row that is related to many rows on the other side. For example, there is one site row for many location rows because there are many locations at each of the study sites. Logical relationships between the Geology files are limited to the requirement that all sys\_loc\_codes be reported in the Location table.

## • 2.7 Definition of a Facility, Site, and Location

It is important to understand how this EDD defines a facility, site, and location. Each facility (facility\_id) will be identified with its EPA ID number (see Appendix A.1). The site (site\_code) will be the operable unit identifier and there is at least one per facility. Each site can contain one or more locations that are distinct points defined by an X and Y Universal Transverse Mercator (UTM) coordinate. Examples of locations include soil borings, monitoring wells, and sampling locations. Each location identifier (sys\_loc\_code) must be unique for a facility. Figure 2-2 provides a diagram of the facility components.

**Figure 2-2. Facility component definitions**



Facility Id = EPA ID #

Site = Site Operable Unit = site\_name

**Must be unique at a Facility**

Location= sample location, Well ID, Boring ID = sys\_loc\_code

**Must be unique at a Facility**

Data for a location may be reported for more than one Site Operable Unit.

## - **2.8 Reporting Null Values**

Many fields are optional in this EDD. When a field is not listed as required in Sections 3, 4, and 5, a null or blank may be appropriate. However, the blank value must still be surrounded by tabs or commas. In other words, the number of fields is always the same, whether or not the fields include data. Refer to Table 2-5 where the second of three fields shown is considered optional.

**Table 2-5. Examples of how to report null values**

Example	Comment
"data_one"→ "data_two" → "data_three" "data_one", "data_two", "data_three"	O.K. All fields populated, one tab or comma between fields.
"data_one" → → "data_three" "data_one",, "data_three"	O.K. Optional field not populated, 2 tabs or 2 commas between first and third field.
"data_one" → "data_three" "data_one", "data_three"	Not O.K. Optional field omitted, only 1 tab or comma between first and third field.

## - **2.9 Valid Values**

Valid values, also known as reference values or code lists, govern the contents of some fields in the database. In other words, some fields may contain only those values within a certain predetermined range or list of codes. A full list of columns that reference valid values is presented in Table 2-6. This list is also cross-referenced to the file structures presented in Sections 3, 4, and 5. If you require the addition of valid values to any of the tables listed below, contact the data management staff using the contact information provided in the technical support section.

**Table 2-6. Cross-reference between the valid value tables in appendix and the EDD files**

Valid Value Table	Appendix Sect.	Column
<b>EDD File</b>		
Reference point	7.2	Reference_point
Horizontal collection method	7.3	
	horz_collection_method_code	Location
Horizontal accuracy unit	7.4	horz_accuracy_unit
Horizontal datum	7.5	horz_datum_code
Elevation collection method	7.6	
	elev_collect_method_code	Location
Elevation datum	7.7	elev_datum_code
Source_code	7.8	source_scale
Loc_type	7.9	loc_type
Analyte	7.10	cas_rn
<b>Test/Results</b>		
Lab_anl_method_name	7.11	lab_anl_method_name
Results		Test/

Lab	7.12	lab_name_code	
Test/Results			
Matrix	7.13	sample_matrix_code, lab_matrix_code	Chemistry
Sample, Test/Results			
Std_prep_method	7.14	lab_prep_meth	
Test/Results			
Qualifier	7.15	lab_qualifiers	
Test/Results			
Result_type	7.16	result_type_code	
Test/Results			

Table 2-6. Cross-reference between the valid value tables in appendix and the EDD files (continued)			
Valid Value Table	Appendix Sect.	Column	
EDD File			
Sample_type	7.17	sample_type_code	Chemistry
Sample			
Unit	7.18	depth_unit (Sample), result_unit (Result), subsample_amount_unit (Test)	Chemistry Sample, Test/Result, Well Construction, Geology Samples, Water Level
Geology soil materials	7.19	material	Geology
Lithology			
Well construction and materials	7.20		
		segment_type, material	Well
Construction			

## • 2.10 Reporting Re-tests

For Initial tests, all analytes should be reported. For retests only reportable chemicals should be reported. The initial test will have reportable\_result set to "No" for all chemicals that are reported in retests. Table 2.7 provides an example of reporting re-tests.

**Table 2-7. Example of reporting re-tests**

Test Type		Chem Name		Cas rn	Result Value		Detect
Flag	Lab Qualifiers	Reportable Result			Result_Comment		
InitialBenzene71-43-21000YENotoo concentrated to quantitate							
Initial	Toluene	108-88-3	5	N	U	Yes	not
detected							
Initial	Xylenes	1330-20-7	5	N	U	Yes	not
detected							
dilution1	Benzene	71-43-2	780	Y		Yes	
quantitated							

## • 2.11 Reporting Non-detects

Non-detects must be reported as shown in the example below. Each non-detect row must have the detect\_flag = N, a reporting\_detection\_limit, and null in the result value field. Table 2.8 presents an example of reporting non-detects.

**Table 2-8. Example of reporting non-detects**

Cas rn	Result Value	Detect Flag	Reporting Detection Limit	Laboratory_ qualifiers
Detection Limit Unit Result_comment				
108-88-3.15Y.005ug/mlU				
108-88-3		N	.005	ug/ml not detected U

## • 2.12 Reporting Tentatively Identified Compounds

Tentatively Identified Compounds (TICs) should be reported where available. The naming of

TICs should be applied in a cascade fashion. The TIC should be identified to analyte name if possible. If this is not possible, then the TIC should be identified to class. As a final naming choice, the TIC should be identified as Unknown. For the purpose of this EDD, the valid values list assumes the laboratory will report up to 10 TICs. Only the 10 most concentrated TICs should be reported. Table 2-9 shows examples of the nomenclature for TICs. As an example, if a sample has three Unknown Hydrocarbons, then the TICs are labeled UnkHydrocarb1, UnkHydrocarb2, and UnkHydrocarb3. TIC names are to be reported in the cas\_rn field, Pos #31, of the Test/Result file (Tables 4-3 and Table 4-4). In addition, the result\_type\_code, Pos # 35 in the Test/Result file should have "TIC" for all TIC records.

**Table 2-9. Example nomenclature for TIC reporting**

<b>TIC Name</b>	<b>Number for TIC</b>	<b>Reported Name in cas_rn</b>
Unknown	1-10	Unknown1 - Unknown10
Unknown Hydrocarbon	1-10	UnkHydrocarb1 - UnkHydrocarb10
Unknown PAHs	1-10	UnkPAH1 - UnkPAH10
Unknown Aromatics	1-10	UnkAromatic1 - UnkAromatic10
Unknown VOA	1-10	UnkVOA1 - UnkVOA10
Unknown SV	1-10	UnkSV1 - UnkSV10

### - 2.13 Data Types

The table below describes the data types used in the chemistry and geology file descriptions. In addition to the types listed below, certain fields have single and double data types. The single data type stores number from -3.402823E38 to -1.401298E-45 for negative values and from 1.401298E-45 to 3.402823E38 for positive values, with decimal precision of up to 7. The double data type stores numbers from -1.79769313486231E308 to -4.94065645841247E-324 for negative values and from 1.79769313486231E308 to 4.94065645841247E-324 for positive values, with decimal precision of up to 15.

**Table 2-10. Data type descriptions**

<b>Type</b>	<b>Description</b>	<b>Decimal Precision</b>	<b>Comments</b>
Integer	Stores numbers from -32,768 to 32,767 (no fractions).	none	
'Y' or 'N'	Boolean field used to indicate yes or no to a question. Enter either Y or N.	NA	
Time	Time in 24-hr (military) HH:MM format.	NA	Text(5) is standard length for time.
Date	Date format is MM/DD/YYYY.	NA	
Text	Stores characters and numbers.	NA	Length restrictions are indicated in parenthesis.

### - 2.14 Data Entry Tools Provided to Create the EDD Files

The files can be produced using any software with the capability to create text files. These files are especially easy to create using spreadsheet or database software packages. However, if

these are unavailable, the files can be created using a word processor or text editor. Table 2-11 provides instructions for creating tab delimited text files from some of the more popular software packages. In the near future EPA will publish a field data checker that can be used to validate these text files.

**Table 2-11. Instructions for producing tab delimited text files from some popular software packages**

	Package	Type	Instructions
Access 97	Database	1. Create tables using file structures in Sections 3 and 4 2.	After data are entered, close table. 3. Click on table name (under table tab) and then select "File," "Save As" from the top menu. Save to an external file or database. Change "Save as Type" to a text file. Change the file extension from "txt" to "tab." Press OK. This will start the export wizard. 4. In the export wizard, select "Delimited," then press the "Next" button. Select "Tab" as the delimiter type and " " as the text qualifier. Press the "Next" button. Select a destination and name for the file. Press the "Finish" button.
Excel 97	Spreadsheet	1. Select "File," "Save As" from the top menu. Change	"Save as Type" to a "Text (Tab Delimited)" file. Press the "Save" button.
Quattro® v8	Spreadsheet	1. Select "File," "Save As" from the top menu. Change the	"File Type" to "ASCII Text (Tab Delimited)." Press the "Save Button."
Word 97	Word Processor	Warning: A word processor is not the best tool for the	job! A large paper size will have to be selected to prevent wrapping for most files. 1. Enter data into a table in Word. Any text entered must be contained within double quotes. 2. Select "Table," "Select Table" from the top menu. When the table is highlighted, select "Table," "Convert to Text," "Separate Text with Tabs." 3. Select "File," "Save As" from the top menu. Change "Save as Type" to "MS DOS Text (*.txt).
Lotus 1-2-3	Spreadsheet	1. Select "File," "Save As" from the top menu. Change	"Save as Type" to a "Comma Separated Value (CSV)" file. Provide file name. Press the "Save" button.

Several files are included on EPA's EDMAN website to assist in creating the chemistry and geology EDDs.

Two Microsoft Excel Workbooks files, EPAR5ChemEDD.xls and EPAR5GeoEDD.xls, provide electronic templates for the EDD files. To create an EDD, simply enter your data into the worksheets provided and then follow the instructions to create a tab delimited text file.

Two Microsoft Access database files, EPAR5ChemEDD.mdb and EPAR5GeoEDD.mdb also provide electronic templates for the EDD files. To create an EDD, simply enter your data into the database files provided and then follow the instructions to create a tab delimited text file.

## - **2.15 Using the Electronic Data Checkers to Validate EDDs**

The Electronic Laboratory Data Checker (ELDC) and Electronic Field Data Checker (EFDC) are used to check the EDD files prior to submittal. The ELDC is used to check the following four Chemistry files: chemistry sample, chemistry test/results, chemistry test/result with QC data,

and batch. The EFDC is used to check the remaining EDD files.

The ELDC and EFDC installation files are provided on the EDMAN website as EPAR5\_ELDCSetup.EXE and EPAR5\_EFDCSetup.EXE. To install ELDC and EFDC, simply double-click on the files and follow the installation instructions. Once ELDC and EFDC are installed on a workstation, they may be used to check the EDD files prior to reporting to EPA. The EDMAN website is <http://www.epa.gov/region5superfund/edman>.

When the ELDC starts, the user needs to select the EDD file format associated with the type of file that will be checked (i.e., EPAR5SMP\_v1 for the chemistry sample file). Table 2-12 shows the correlation between ELDC “EDD file format” and the file types used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the “Check” button is clicked to begin the checking process.

**Table 2-12. Correlation between ELDC EDD file formats and chemistry EDD file types**

<b>ELDC EDD File Format</b>	<b>Chemistry EDD File Type</b>
EPAR5SMP_v1	Chemistry Sample
EPAR5TRS_v1	Chemistry Test/Result
EPAR5TRSQC_v1	Chemistry Test/Result with QC Data
EPAR5BAT_v1	Batch

When the EFDC starts, the user needs to select the EDD file format associated with the type of file that will be checked (i.e. EPARSITE\_v1 for the site file). Table 2-13 shows the correlation between EFDC “EDD file format” and the file types used in the EDD. Next the actual file is selected by using a standard browse function. Finally, the “Check” button is clicked to begin the checking process.

**Table 2-13. Correlation between EFDC EDD file formats and EDD file types**

<b>EFDC EDD File Format</b>	<b>EDD File Type</b>
EPAR5SITE_v1	Site
EPAR5LOC_v1	Location
EPAR5GWTR_v1	Water Level
EPAR5DRA_v1	Drilling Activity
EPAR5LTH_v1	Lithology
EPAR5WEL_v1	Well
EPAR5WSG_v1	Well Construction
EPAR5GSMP_v1	Geology Samples
EPAR5TBL_v1	Water Table
EPAR5DHP_v1	Down Hole Point Data

If there are errors or warnings an error log is created that can be viewed in detail or summary mode to gain an understanding of the problem. After the errors are corrected, the ELDC and EFDC can be re-run to assure that no errors remain. If error messages remain because new

valid value codes are required, the files should be considered clean and reported to EPA with the new codes clearly explained in the cover letter.

## • 2.16 Submitting Your EDD to the EPA

Once the EDD files are complete and ready to submit, the following steps should be taken to assure a streamlined process. Each EDD must be accompanied by a cover letter (please include as electronic text file on diskette as well) that specifies the study site, contact for technical questions, file names, any exceptions to the EDD format, and a clear notification if the EDD contains previously submitted data. If data are being resubmitted, please indicate the reason for resubmission and provide guidance on how to handle the original data (e.g., delete it from the database). Files should not be compressed. Completed EDDs should be sent on a 3.5" IBM-compatible diskette or 100 MB/250MB Zip® Disk that is clearly labeled with the project code and date of transfer to:

### Site RPM

US Environmental Protection Agency  
77 West Jackson Boulevard  
Chicago, IL 60604

In lieu of disk copy, email submissions may be arranged with your RPM.

## • 2.17 Example of a Typical Initial, Chemistry and Geology EDD Deliverable

Examples of Initial, Chemistry and Geology EDD files populated with the first few rows of a typical data set are presented in Figures 2-3, 2-4, 2-5, and 2-6. In order to fit the examples on one page, not all of the fields (i.e., columns) were included for certain files (e.g., Site, Location, Chemistry Sample). *Additional Fields* is denoted where all the fields are not included. It should be noted that all fields are required when submitting EDD files, regardless of whether or not the field is populated (see Section 2.9). The special cases discussed in previous sections are illustrated here together with standard examples.

**Figure 2-3. Example Initial EDD ready for conversion to text file**

### Site File:

site_code	facility_id	site_name	site_task_code	site_desc1	site_desc2
	contact_name	address1	<i>Additional Fields</i>	email_address	ExampleFAC123456723Example
SiteJohn	Smith	23 Main Street	abc	abd.com	

### Location File:

sys_loc_codes	sys_well_codex	coordy-	coordsurf	elev	unit	coord_sys	desc	observation_date	alt_x	coordalt_y	coordcoord_type-
code	identifier	<i>Additional Fields</i>	comment	MW01	MW01	414456.784424543.21120.2ft	UTM Zone 1702/21/1999-				
82.0023139.9612	Lat Long1	SB-01	NONE	414709.234424304.12126.3ft	UTM Zone 1702/23/1999-						
82.0053139.35794	Lat Long1	MW03	MW03a	414601.234424700.33130.1ft	UTM Zone 1702/22/1999-						
82.0102339.9701	Lat Long1	MW03	MW03b	414601.234424700.33130.1ft	UTM Zone 1702/22/1999-						
82.0102339.9701	Lat Long1	<b>Notes:</b> SB-01 has no well therefore "NONE" is entered in sys_well_code.									
MW03a and MW03b are multiple wells within same boring.											

### Location File of Resurveyed Location

The following table shows the fields requiring data when submitting a new location file resulting from a resurvey of the datum elevation at one location. Only the sys\_loc\_code, sys\_well\_code, and the datum elevation fields are populated. All other fields in the location file are left null. In this example, the top of the well casing (TOC) was resurveyed. The elevation was found to be different from the originally reported elevation. The TOC was also used as the datum for the well. Therefore, a new location file needs to be submitted where only the fields shown below are populated with the new data from the resurvey. All other fields need to be null.

	sys_loc_code	sys_well_code	Additional
Field	stop_casing_elev	Datum_value	datum_unit
	step_or_linear	datum_collection_method_code	datum_desc
	datum		
m_start_date	MW01	MW01119.2119.2	FtLinearA1top of casing04/12/99

**Figure 2-4. Example Chemistry EDD ready for conversion to text file**

**Chemistry Field Measurements File:**

table\_namesys\_codeparam\_codemeasurement\_datemeasurement\_timeparam\_valueparam\_unitmeasurement\_  
methodparam\_value\_backgroundremarkAdditional

Fieldscalibration\_date SiteExampleTemp07/12/200013:3029deg cThermometerAmbient air  
temp LocationMW01pH07/12/200014:207.2Ph unitspH probepH of groundwater

**Sample File:**

sys\_sample\_codesample\_namesample\_matrix\_codesample\_type\_  
codesample\_sourceparent\_sample\_codesample\_delivery\_groupsample\_  
datesample\_timesys\_loc\_codeAdditional

Fieldscomment MW01040198WGNField04/01/1998MW01 MW02040198WGNField04/01/1998MW02

**Test/Result File:**

sys\_sample\_codelab\_anl\_method\_nameAdditional Fieldstotal\_or\_dissolvedcolumn\_numberbest\_  
typelab\_matrix\_codeanalysis\_locationbasisAdditional Fieldsdilution\_factorlab\_name\_codeqc\_  
levellab\_sample id\_Additional

Fields MW02040198SW8240TInitialWGLBWet1.0ABCquantLAB01 MW02040198SW8240TInitialWGLB  
Wet1.0ABCquantLAB02 MW02040198SW8240TREanalysisWGLBWet10.0ABCquantLAB02R

**Test/Result file (continued):**

cas\_rnchemical\_nameresult\_valueresult\_error\_deltareportable\_resultdetect\_flaglab\_  
qualifiersorganic\_ynreporting\_detection\_limitquantitation\_limitresult\_unitsAdditional Fieldsresult\_  
comment 71-43-2BENZENE12TRGYesYY10ug/ml 108-88-3TOLUENETRGYesNY10ug/ml 1330-20-  
7XYLENETRGYesNY10ug/ml

**Water Level File:**

sys\_loc\_codesys\_well\_codemeasurement\_datemeasurement  
\_timehistorical\_ref\_elevwater\_level\_depthwater\_level\_elevcorrected\_elevAdditional

Fieldsremark MW01MW0105/10/199913:1031.189.1

MW02	MW02	05/10/1999	13:45		34.1	89.0	
------	------	------------	-------	--	------	------	--

**Figure 2-5. Examples of QC data fields within Chemistry EDD**

**QC fields in a normal field sample (i.e., sample\_type\_code = N, TB, etc.)**

The following table shows some of the fields in the test/result file for a normal field sample. Notice that all QC fields are blank.

```
cas_rn    result_value    qc_original_conc    qc_spike_added    qc_spike_measured    qc_spike_
recovery  qc_dup_original_conc    qc_dup_spike_added    qc_dup_spike_measuredqc_dup_spike_
recovery  93-76-51.56    94-75-73.17    94-82-62.31
```

**QC fields in a normal field sample with surrogates (i.e., sample\_type\_code = N, TB, etc.)**

The following table shows some of the fields in the test/result file for a normal field sample. Notice that QC fields are blank except on surrogate rows. Many users will need only the recovery field data; the spike added and spike measured fields will not be needed in most situations.

```
cas_rnresult_valueresult_unitresult_type_codeqc_original_concqc_spike_addedqc_spike_
measuredqc_spike_recovery    93-76-51.56mg/ITRG
```

94-75-7	3.17	mg/l	TRG			
PHEN2F		mg/l	SUR		12.5 12.9	

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**QC fields in a laboratory method blank sample (i.e., sample\_type\_code = LB)**

The following table shows some of the fields in the test/result file for a laboratory method blank sample. Notice that all QC fields are blank.

```
cas_rn    result_value    lab_qualifier    qc_original_concqc_spike_added    qc_spike_measured
qc_spike_recovery    qc_dup_original_conc    qc_dup_spike_addedqc_dup_spike_
measuredqc_dup_spike_recovery    93-76-5U    94-75-7U    94-82-60.01
```

**QC fields in a matrix spike (i.e., sample\_type\_code = MS)**

The following table shows some of the fields in the test/result file for a matrix spike sample. Notice that all "dup" QC fields are blank, and that the result\_value field is not needed. Also, the qc\_rpd field would be blank for these rows. Many users will need only the calculated recovery field (qc\_spike\_recovery).

```
cas_rnresult_valueqc_original_concqc_spike_addedqc_spike_measuredqc_spike_recoveryQc_rpdqc_dup_
original_concqc_dup_spike_addedqc_dup_spike_measuredqc_dup_spike_recovery    93-76-
51.564.185.3690.9    94-75-73.174.187.1595.2    94-82-62.314.225.6679.3
```

**Figure 2-5. Examples of QC data fields within Chemistry EDD (continued)**

**QC fields in a matrix spike duplicate (i.e., sample\_type\_code = SD)**

The following table shows some of the fields in the test/result file for a matrix spike duplicate sample. Notice that all "dup" QC fields are completed, and that the result\_value field is not needed. Also, the qc\_rpd field would be completed for these rows. Many users will need only the calculated recovery field (qc\_dup\_spike\_recovery).

```
cas_rnresult_valueqc_original_concqc_spike_addedqc_spike_measuredqc_spike_recoveryQc_rpdqc_dup_
original_concqc_dup_spike_addedqc_dup_spike_measuredqc_dup_spike_recovery    93-76-
5101.564.235.7097.8    94-75-7123.174.237.62105    94-82-6152.314.135.3373.1
```

**QC fields in a matrix spike/matrix spike duplicate (i.e., sample\_type\_code = MSD)**

The following table shows some of the fields in the test/result file for a matrix spike/matrix spike duplicate considered as single sample (they can be reported this way, or as two separate samples as shown above). Notice that all QC fields are completed, and that the result\_value field is not needed. Also, the qc\_rpd field would be completed for these rows. Many users will need only the calculated recovery fields (qc\_spike\_recovery and qc\_dup\_spike\_recovery).

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_rpd	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
51.564.185.3690.971.564.235.7097.8	94-75-73.174.187.1595.2103.174.237.62105	94-82-62.314.225.6679.382.314.135.3373.1								

**QC fields in a LCS (i.e., laboratory control sample, blank spike, sample\_type\_code = BS)**

The following table shows some of the fields in the test/result file for a LCS sample. The qc\_rpd field would be blank for these rows. Many users will need only the calculated recovery field (qc\_spike\_recovery). LCS duplicate samples (i.e., sample\_type\_code = BD) and LCS/LCSD samples (i.e., sample\_type\_code = BSD) follow the patterns similar to the SD and MSD samples described above.

cas_rn	result_value	qc_original_conc	qc_spike_added	qc_spike_measured	qc_spike_recovery	qc_dup_original_conc	qc_dup_spike_added	qc_dup_spike_measured	qc_dup_spike_recovery
93-76-55.005.2610	94-75-71.001.02102	94-82-612.512.9103							

**Figure 2-6. Example Geology EDD ready for conversion to text file**

**Drill Activity File:**

**sys\_loc\_code** **drill\_event** **start\_depth** **end\_depth** **drill\_date** **diameter** **Additional Fields** **purpose**

W-4A	1a	40	80	07/12/1999	8		Advanced
well additional 40 feet to reach lower aquifer							
W-6B	2c	45	110	07/14/1999	8		Advanced
well 55 feet to reach bedrock.							

**Lithology File:**

<b>sys_loc_code</b>	<b>start_depth</b>	<b>material_type</b>	<b>geo_unit_1</b>	<b>Additional Fields</b>	<b>Remark</b>
<b>1</b>	<b>Additional Fields</b>	<b>odor</b>			
W-1A	0	CL	Glacial		grayish brown clay, trace fine sand, med strength, med plastic, rapid dilatancy ,some brick fragments
W-1A	10	SW	Outwash		med dense, 50% fine to coarse brown sand, 30% gravel, dry, trace clay
W-1A	23	SP	Outwash		dense, 70% coarse brown sand, 20% gravel, poorly graded, rounded, moist
W-2A	0	ML	Alluvial		Dark brown silt with little fine sand, low strength, nonplastic, rapid dilatancy

**Well File:**

<b>sys_loc_code</b>	<b>sys_well_code</b>	<b>Additional Fields</b>	<b>top_casing_elev</b>	<b>datum_value</b>		
	<b>datum_unit</b>	<b>datum_desc</b>	<b>Additional Fields</b>	<b>geologic_unit_code</b>	<b>remark</b>	
	W-1A	W-1A	122.0	122.0	ft	top of casing of well
W-2A	W-2A		122.3	122.3	ft	top of casing of well
		alluvial				

**Well Construction File**

<b>sys_loc_code</b>	<b>sys_well_code</b>	<b>segment_type</b>	<b>material_type_code</b>	<b>start_depth</b>	<b>end_depth</b>		
	<b>depth_unit</b>	<b>inside_diameter</b>	<b>Additional Fields</b>	<b>remark</b>	<b>W-1AW-</b>		
	1A	surface plug	concrete	0	1.5	ft	4.5
W-1A	W-1A	annular backfill	neat cement grout	1.5	8	ft	2.375
W-1A	W-1A	annular Seal	Bentonite pellets	8	8	ft	2.375
W-1A	W-1A	Filter Pack	sand pack	8	23.1	ft	2.375
W-1A	W-1A	Protective Casing	steel	-2.2	3.2	ft	4
W-1A	W-1A	casing	stainless steel 304	-2.1	24	ft	2
W-1A	W-1A	screen	stainless steel 304	24	29	ft	2
W-2A	W-2B	protective casing	steel	-2.0	3.0	ft	2
W-2A	W-2B	surface plug	concrete	0	1.5	ft	4.5
W-2A	W-2B	annular backfill	neat cement grout	1.5	10	ft	2.375

**Figure 2-6. Example Geology EDD for new monitoring wells or direct push samples**

### ready for conversion to text file (continued)

#### Geology Sample File:

Geology, Sample File:

sys_loc_code	geo_sample_code	sample_name	sample_top	sample_bottom	sample_date	Additional		
Fields	sample_method	material_type	Additional Fields		organic_carbon_units			
W-1AABCD-14604/23/1999split spoonSW								
W-1A	ABCD-2		14	16	04/23/1999			
split spoon		SW						
W-2A	DEFG-1		5	7	04/24/1999			
split spoon		SP						

#### Water Level File:

sys_loc_code	sys_well_code	measurement	date	measurement_time	historical_ref_elev		
<i>water_level_depth</i>		<i>water_level_elev</i>		<i>corrected_elev</i>			
<i>Additional Fields</i>			<i>remark</i>	MW01MW0105/10/199913:1031.189.1			
MW02	MW02	05/10/1999	13:45		34.1	89.0	

#### Water Table File:

Water Table							
sys_loc_code	Type	sequence	depth	flowing_yn	measurement_method		
capped_pressure		capped_pressure_unit		Additional Fields			
temperature_unit		MW01Unconfinedstable21.2yelectric sensor					
MW02	Unconfined	stable	21.0	y	electric sensor		

#### Geology Down Hole Point File:

sys_loc_code	depth	param	param_value
MW01	10.8	Tip Stress	612
MW01	11.2	Tip Stress	624
MW01	10.8	Sleeve Stress	6.1
MW01	11.2	Sleeve stress	5.8
MW02	9.5	Resistivity	510
MW02	10.1	Resistivity	521
MW02	11.0	Resistivity	489

### 3. FORMATS FOR INITIAL FILES

This section contains information regarding the base map and the two tables that define the file structures for the initial EDD. These files are initial files that need to be submitted to EPA prior to, or in conjunction with, the first Chemistry EDD or Geology EDD submission. These files need only be submitted once. The only time a site or location file would be submitted more than once is if the data had changed in some way (e.g., contact name, location resurveyed) or if the site contains a new sampling location not previously submitted (e.g., new monitoring well installation). The columns marked "Required" must be reported for each row in the file. If they are not reported, the file will not load. Columns marked "If available" should also be reported.

#### • 3.1 Site Base Maps

Site base maps must be electronic CAD files in a DXF interchange format. The maps are to

include all well locations, waste management units, landfills, buildings, and roads. Do not include any groundwater contours, contaminant contours, or other temporal type information. If the CAD file is available in real world locational coordinates, provide them along with a brief text description of the type of projection and datum used (UTM NAD 83 preferred). Also include text descriptions of the units and scale of the base map. The site base map file must be named according to the following convention:

SiteName.DXF

### - 3.2 Site

Submitted once to define a site and provide the name, email address, and fax number of the main data contact. This file is required to be submitted as part of the initial EDD submittal. Each Site file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5SITE\_v1.txt (or .csv)

**Table 3-1. Site file data structure**

Pos#	Column Name	Data Type	Required	Description
1	site_code	Text(3)	Required	Unique code for Operable Unit (site/area).
Typically the code is "01" unless there is a second or third operable unit at facility. Code of "02" and "03" should be used for second and third unit, respectively. Contact the EPA RPM if unsure of proper code,.				
2	facility_id	Text(20)	If available	EPA ID Code - Facility identifier code (see Appendix 7.1).
3	site_name	Text(30)	Required	Name of site.
4	site_task_code	Text(10)	If available	Code used to identify the task under which the site or area is investigated. This field is here for reference only. Field samples are formally associated with task codes.
5	site_desc1	Text(70)	If available	Site description, part one.
6	site_desc2	Text(70)	If available	Site description, part two.
7	contact_name	Text(50)	Required	Site contact name.
8	address1	Text(30)	Required	Site address, part one.
9	address2	Text(30)	If available	Site address, part two.

**Table 3-1. Site file data structure (continued)**

Pos#	Column Name	Data Type	Required	Description
10	City	Text(30)	Required	Site city.
11	State	Text(2)	Required	Site state.
12	Zipcode	Text(10)	Required	Site zip code.
13	phone_number	Text(30)	Required	Site contact phone number.
14	alt_phone_number	Text(30)	If available	Alternative site phone number.
15	fax_number	Text(15)	If available	Site contact fax number.
16	email_address	Text(30)	Required	Site contact email address.

### - 3.3 Location

Submitted to define the sampling locations for a site. This file is required to be submitted as part of the initial EDD submittal. Each row contains the definition of a unique sampling location. In the case of multiple wells located in one borehole, each well in the borehole will have the same sampling location identifier (sys\_loc\_code) and will be differentiated by a unique well identifier

(sys\_well\_code), such as MW-01a, MW-01b, etc. An example of this case is presented in the Location File of Figure 2-3.

Each sampling location should only be reported once for a site. The only time data for a previously reported location is to be resubmitted is if a change occurs at the location such as the location being resurveyed. If the location is resurveyed and changes result to the coordinates and datum elevations, a new location file should be submitted with the location identifier, well identifier (if location is a well), and only the new updated data, all other fields must be null. The changes must be documented in an EDD submittal cover letter and the RPM should be notified. An example of a completed location file resulting from a resurvey is presented in Figure 2-3.

This file data structure incorporates the requirements of EPA's Locational Data Management Policy (LDP). LDP requires geographic coordinates and associated method, accuracy, and description codes for all environmental measurements collected by EPA employees, contractors, and grantees. A key premise of this policy is that secondary use of these data in geographic information systems (GIS) and statistical mapping programs are significant to the overall mission of the Agency. To facilitate the integration of data, EPA has established the LDP to standardize the coding of geologic coordinates and associated attributes. As a result, coordinates for each location must be reported in both universal transverse mercator (UTM) and in latitude and longitude with associated attributes.

Note: If the location being submitted is a monitoring well that has been installed more than one year from the EDD submittal date, the location table fields from Pos# 41, depth\_to\_top\_of\_screen, through Pos # 49, datum\_start\_date, are required to be populated. These fields are required to obtain the vertical location from which the groundwater sample was taken and the vertical location of the water table. If the location is not a well or is a well that has been installed within the last year, fields from Pos #41 through Pos #49 should be left null. These fields are a subset of the Geology files and for wells installed within the past year, will be captured within the Geology EDD files.

Each Location file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5LOC\_v1.txt (or .csv)

**Table 3-2. Location file data structure**

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Location identifier of sample collection, soil boring, or well installation. Examples of possible sys_loc_code are MW-01, A-1, SB6, etc. See Section 2.6 "Definition of a Facility, Site, and Location" for additional information.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells in one boring. Code is the same as that used for sys_loc_code if single well, e.g., if sys_loc_code is MW-01 then sys_well_code is MW-01. Enter "NONE" if there is no well.
3	x_coord	Number w/decimal precision	up to 15	Required Sampling location numeric x UTM NAD83 coordinate in meters.
4	y_coord	Number w/decimal precision	up to 15	Required Sampling location numeric y UTM NAD83 coordinate in meters.
5	surf_elev	Number w/decimal precision	up to 15	Required Sampling location

surface elevation in feet.

6	elev_unit	Text(15)	Required	Unit of measurement for elevations.
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Units must be in feet.

7	coord_sys_desc	Text(70)	Required	Sampling location coordinate system
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description. Must be UTM followed by appropriate zone number, i.e., UTM zone xx.

8	observation_date	Date	Required	Date observation or site survey was
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made.

9	alt_x_coord	Text(20)	Required	Longitude of sampling location in
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decimal degrees.

10	alt_y_coord	Text(20)	Required	Latitude of sampling location in decimal
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degrees.

11	coord_type_code	Text(20)	Required	Use "Lat Long." Code for the
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coordinate type used for alt\_x and alt\_y.

12	identifier	Text(20)	Required	For this EDD use "1." This field is a
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text identifier that facilitates unique representation of the coordinate system.

13	horz_collect_method_code	Text(2)	Required	Use codes in Appendix 7.3 horizontal
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collection method. Method used to determine the latitude/longitude.

**Table 3-2. Location file data structure (continued)**

Pos#	Column Name	Data Type	Required	Description
14	horz_accuracy_value	Text(20)	Required	Accuracy range (+/-) of the latitude and longitude. Only the least accurate measurement should be reported, regardless if it is for latitude or longitude.
15	horz_accuracy_unit	Text(15)	Required	Use values in horizontal accuracy units valid value table, Appendix 7.4. Unit of the horizontal accuracy value.
16	horz_datum_code	Text(1)	Required	Use codes in horizontal datum valid value table, Appendix 7.5. Reference datum of the latitude and longitude.
17	elev_collect_method_code	Text(2)	Required	Use codes in elevation collection method valid value table, Appendix 7.6. Method used to determine the ground elevation of the sampling location.
18	elev_accuracy_value	Text(20)	If available	Accuracy range (+/-) of the elevation measurement.
19	elev_accuracy_unit	Text(15)	If available	Use values in unit valid value table, Appendix 7.18. Unit of the elevation accuracy value.
20	elev_datum_code	Text(1)	Required	Reference datum for the elevation measurement. Must use valid value from elevation datum table, Appendix 7.7
21	source_scale	Text(2)	Required	Scale of source used to determine the latitude and longitude. Must be a valid code from source scale code table, Appendix, 7.8. If GPS is used scale does not apply and "N" should be entered.
22	subcontractor_name_code	Text(10)	If available	Code used to distinguish subcontractor name.
23	verification_code	Text(1)	Not wanted	This field is only to be used by US EPA personnel.
24	reference_point	Text(50)	If available	Use codes in reference point valid value table, Appendix 7.2. Describes the place at which geologic coordinates were established.
25	geometric_type_code	Text(20)	If available	Code used to distinguish the geometric type of the location. For this EDD use "point."
26	rank	Long	Not wanted	This field is only to be used by US EPA personnel.
27	loc_name	Text(30)	If available	Sampling location name.
28	loc_desc	Text(70)	If available	Sampling location description.
29	loc_type	Text(10)	If available	Sampling location type. Use codes in loc_type valid value table, Appendix 7.9
30	loc_purpose	Text(20)	If available	Sampling location purpose.
31	primary_site_code	Text(20)	Required	Unique code for site or area. Must match site_code from Table 3-1: Site File Data Structure.

**Table 3-2. Location file data structure (continued)**

Pos#	Column Name	Data Type	Required	Description
32	within_facility_yn	Text(1)	Required	Indicates whether this sampling location is within facility boundaries, “Y” for yes or “N” for no.
33	loc_county_code	Text(10)	If available	Location county code; controlled vocabulary using FIPS (Federal Information Processing Standard) codes. FIPS codes can be found via the internet at <a href="http://www.itl.nist.gov/fipspubs/">http://www.itl.nist.gov/fipspubs/</a> or <a href="http://www.oseda.missouri.edu/jgb/geos.html">http://www.oseda.missouri.edu/jgb/geos.html</a> .
34	loc_district_code	Text(10)	If available	Location district code; controlled vocabulary using FIPS codes.
35	loc_state_code	Text(10)	If available	Location state code; controlled vocabulary using FIPS codes.
36	loc_major_basin	Text(10)	If available	Location major basin; controlled vocabulary using HUC (Hydrologic Unit Codes). HUC codes can be found via the internet at <a href="http://www.epa.gov/surf">http://www.epa.gov/surf</a> . The first 8 digits of the HUC code should be entered here.
37	loc_minor_basin	Text(10)	If available	Location minor basin; controlled vocabulary using HUC codes. Any digits after the 8 <sup>th</sup> (first 8 are reported in loc_major_basin) should be reported here.
38	remark	Text(255)	If applic-able	Location specific comment.
39	total_depth	Number w/decimal precision	up to 15 If available	Total
40	depth_to_bedrock	Number w/decimal precision	up to 15 If available	Depth
41	depth_to_top_of_screen	Number w/decimal precision	up to 15 Required if location is a well	

more than 1 year old

Depth in feet below ground surface to the top of the well screen. This information is required to obtain the vertical location from which the groundwater sample was taken. Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.

**Table 3-2. Location file data structure (continued)**

Pos#	Column Name	Data Type	Required	Description
42	depth_to_bottom_of_screen	Number w/decimal precision	up to 15	Required if location is a well more than 1 year old Depth in feet below ground surface to bottom of well screen. This information is required to obtain the vertical location from which the groundwater sample was taken. Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.
43	top_casing_elev	Number w/decimal precision	up to 15	Required if location is a well more than 1 year old Elevation of the top of casing in feet. Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.
44	datum_value	Number w/decimal precision	up to 15	Required if location is a well more than 1 year old Value of datum used to reference water level measurements. Normally EPA uses the elevation of the top of well casing as the datum to reference water levels. Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.
45	datum_unit	Text (15)		Required if location is a well more than 1 year old Use values from Unit valid value table, Appendix 7.18. Unit of measure for the well datum. Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.
46	step_or_linear	Text (6)	If applicable	Use only for re-surveys of well elevations. If a section of the well casing was removed or added use "step" as the value. If nothing was added or removed from the last survey use "linear" as the value.
47	datum_collect_method_code	Text (2)		Required if location is a well more than 1 year old Use codes in elevation collection method valid value table, Appendix 7.6. Method used to determine the datum elevation.

**Table 3-2. Location file data structure (continued)**

Pos#	Column Name	Data Type	Required	Description
48	datum_desc	Text(70)	Required if location is a well more than 1 year old	
49	start_date	Date	Required if location is a well more than 1 year old	

Description of the datum, such as “top of well casing.” Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.

Date datum was first used. Leave null if sample is not from well or well is less than 1 year old. For wells less than 1 year old, info will be reported in geology files.

## 4. FORMATS FOR CHEMISTRY FILES

This section contains tables that define the file structures for the Chemistry EDD. The file structures include field measurement, chemistry sample, test/result, and water level. Please notice that some columns are “Not wanted” and only exist to comply with standard EQuIS® reporting formats. These columns should simply be reported as null values. The columns marked “Required” must be reported for each row in the file. If they are not reported, the data will not load. Columns marked “If available” should be submitted.

### 4.1 Chemistry Field Measurements

This file is used for *in situ* measurements taken in the field such as pH, conductivity, Eh, and dissolved oxygen, that are not associated with a sample but are associated with either a site or location. Also include measurements such as air temperature at the site. Data collected in the field that is associated with a sample, such as on site analysis using a mobile lab, should not use this file. Data associated with individual samples should be reported according to Section 4.2 and 4.3. Each Chemistry field measurement file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5CFM\_v1.txt (or .csv)

**Table 4-1. Chemistry field measurement file data structure**

Pos#	Column Name	Data Type	Required	Description
1	table_name	Text (35)	Required	Enter “Location” if the measured parameter applies to a single location or “Site” if the measured parameter applies to a site.
2	sys_loc_code or site_code	Text (20)	Required	Enter a sys_loc_code if the measured parameter applies to a single location or a site_code if the it applies to a site.
3	param_code	Text (10)	Required	Use values in analyte valid value table, Appendix 7.10. These values were derived from the Chemical Abstracts Registry (CAS) Number for the parameter If available. Otherwise USAF ERPIMS PARLABEL were used.
4	measurement_date	Date	Required	Date of measurement.
5	measurement_time	Text (5)	Required	Time of measurement.
6	param_value	Text (20)	Required	Measured value.
7	param_unit	Text (15)	Required	Units that correspond to param_value.
8	measurement_method	Text (20)	If available	Method used to take measurement.
9	param_value_background	Text (20)	If available	Background value of measured parameter.
10	Remark	Text (255)	If available	Any comment and report measurement detection limit if applicable.
11	subcontractor_name_code	Text (10)	If available	Name of contractor.
12	worker_name	Text (50)	If available	Name of individual that took the measurement.
13	instrument_id	Text (50)	If available	Identifier for instrument used to take measurement.
14	calibration_date	Date	If available	Date that instrument was last calibrated.

### 4.2 Chemistry Sample

The Chemistry sample file contains data for samples collected at a site and location. The unique identifier for each sample is recorded in the sys\_sample\_code. Please record the

sys\_sample\_code as TB+date for trip blank samples. For example a trip blank collected on April 5, 2000 would have a sys\_sample\_code of TB040500. A sys\_sample\_code of 'Trip Blank' is unacceptable because it cannot be distinguished from another trip blank labeled the same way. Each Chemistry sample file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5SMP\_  
v1.txt (or .csv)

**Table 4-2. Chemistry sample file data structure**

Pos#	Column Name	Data Type	Required	Description
1	sys_sample_code	Text(20)	Required	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQUIS®.
2	sample_name	Text(30)	If available	Additional sample identification information as necessary. Is not required to be unique (i.e., duplicates are OK).
3	sample_matrix_code	Text(10)	Required	Code which distinguishes between different types of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. Must use valid value from matrix table, Appendix 7.13.
4	sample_type_code	Text(10)	Required	Code which distinguishes between different types of samples. For example, normal field samples must be distinguished from laboratory method blank samples, etc. Must use valid value from sample_type table, Appendix 7.17.
5	sample_source	Text(10)	Required	This field identifies where the sample came from, either Field or Lab. In this import, this should always be Field.
6	parent_sample_code	Text(20)	Required for field duplicate samples	The value of "sys_sample_code" that uniquely identifies the sample that was the source of this sample. For example, the value of this field for a duplicate sample would identify the normal sample of which this sample is a duplicate.
7	sample_delivery_group	Text(10)	If available	EPA and their US EPA data providers are accustomed to using the CLP document definition of SDG. The CLP definition is more like a lab payment group, and is not the same as required by this specification. Automated data verification by EPA will be enhanced if an SDG is more like a "sampling event." For example, ground water samples should be put into a separate SDG from surface water samples to prevent flags associated with surface water matrix effects from being propagated to ground water results.
8	sample_date	Date	Required	Date sample was collected (in MM/DD/YYYY format for EDD).

<b>Table 4-2. Chemistry sample file data structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
9	sample_time	Time	If available	Time of sample collection in 24-hr (military) HH:MM format.
10	sys_loc_code	Text(20)	Required*	Soil boring or well installation location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2). * Field should be null if field QC sample (e.g., field blank, trip blank, etc.)
11	start_depth	Number w/decimal precision up to 15	If applic-able	Beginning depth (top) of sample in feet below ground surface. Leave null for most ground water samples from monitoring wells. Database will derive this information from the start/end depth of the well screen field located in another data table. Only use for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.
12	end_depth	Number w/decimal precision up to 15	If applic-able	Ending depth (bottom) of sample in feet below ground surface. Leave null for most ground water samples from monitoring wells. Database will derive this information from the start/end depth of the well screen field located in another data table. Only use for groundwater samples if discrete samples are taken at different depth elevations from a single well, i.e. multiple well packer samples.
13	depth_unit	Text(15)	If applic-able	Use values from Unit valid value table, Appendix 7.18. Unit of measurement for the sample begin and end depths.
14	chain_of_custody	Text(15)	If available	Chain of custody identifier. A single sample may be assigned to only one chain of custody.
15	sent_to_lab_date	Date	If available	Date sample was sent to lab (in MM/DD/YYYY format for EDD).
16	sample_receipt_date	Date	If available	Date that sample was received at laboratory (in MM/DD/YYYY format for EDD).
17	sampler	Text(30)	If available	Name or initials of sampler.
18	sampling_company_code	Text(10)	Required	Name or initials of sampling company (not controlled vocabulary).
19	sampling_reason	Text(30)	Not wanted	Report as null.
20	sampling_technique	Text(40)	If available	Sampling technique.

<b>Table 4-2. Chemistry sample file data structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
21	task_code	Text(20)	If available	Code used to identify the task under which the field sample was retrieved. The format for this field is XX-P#-##-##-####. Where XX is the type of task required (PR = Pre Remedial, RI = Remedial Investigation, FS = Feasibility Study, PD = Pre-Design, RD = Remedial Design, RA = Remedial Construction, PC = Post Construction, RM = Removal Action, BD = Before Dredge, AD = After Dredge, BR = Brown Fields, SP = Special Project), and P# is the phase, and ##-##-#### is the date in month, day and year.
22	collection_quarter	Text(5)	Not wanted	Report as null.
23	composite_yn	Text(1)	Required	Is sample a composite sample? "Y" for yes or "N" for no.
24	composite_desc	Text(255)	If available	Description of composite sample (if composite_yn is "Yes").
25	sample_class	Text(10)	not wanted	Report as null.
26	custom_field_1	Text(50)	not wanted	Report as null.
27	custom_field_2	Text(50)	not wanted	Report as null.
28	custom_field_3	Text(50)	not wanted	Report as null.
29	comment	Text(255)	If available	Report as null.

### • 4.3 Chemistry Test/Results

The Chemistry Test/Results file contains data concerning analytical tests and results performed on samples. There are three files associated with test/result data: test/result data, test/result data with quality control (QC) data, and batch data. All data provided by PRPs are expected to be validated prior to submittal to EPA. Therefore the data fields containing QC data are not wanted and Table 4.3 should be submitted. Data provided by US EPA contractors typically are not validated prior to submittal to EPA and require that QC data be submitted using Table 4-4 and Table 4-5. When test/result data are to be submitted without QC data, populate and submit test/result data according to the data structure described in Table 4-3. If QC data are to be submitted with test/result data then populate and submit data according to the data structure described in Table 4-4. Batch data will only be submitted if test/result data with QC data are being submitted. If QC batch data are to be submitted, populate and submit batch data in accordance with Table 4-5.

#### 4.3.1 Chemistry Test/Results without QC

Populate and submit this file when no QC data are to be submitted. Each test/results file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5TRS\_v1.txt (or .csv)

**Table 4-3. Chemistry test/result file data structure**

Pos#	Column Name	Data Type	Required	Description
1	sys_sample_code	Text(20)	Required	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQuIS®.
2	lab_anl_method_name	Text(35)	Required	Laboratory analytical method name or description. A controlled vocabulary column, valid values can be found in the appendix in table lab_anl_method_name.
3	analysis_date	Date	Required	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis as required by EPA.
4	analysis_time	Text(5)	Required	Beginning time of sample analysis in 24_hr (military) HH:MM format. Note that this field, combined with the "analysis_date" field is used to distinguish between retests and reruns (if reported). Please ensure that retests have "analysis_date" and/or "analysis_time" differ from the original test event (and fill out the test_type field as needed).
5	total_or_dissolved	Text(1)	Required	Must be either "D" for dissolved or filtered [metal] concentration, or "T" for everything else
6	column_number	Text(2)	Not wanted	Report as null.
7	test_type	Text(10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "dilution2," and "dilution3."
8	lab_matrix_code	Text(10)	Required	Code which distinguishes between different type of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. See matrix valid value table in Appendix 7.13. The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g. leachates), so this field is available at both the sample and test level.
9	analysis_location	Text(2)	Required	Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for fixed_based laboratory analysis.
10	Basis	Text(10)	Required	Must be either "Wet" for wet_weight basis reporting, "Dry" for dry_weight basis reporting, or "NA" for tests for which this distinction is not applicable. The EPA prefers that results are reported on the basis of dry weight where applicable.
11	container_id	Text(30)	Not wanted	Report as null.
12	dilution_factor	Number w/decimal precision up to 7	Required	Effective test dilution factor.

Table 4-3. Chemistry test/result file data structure (continued)				
Pos#	Column Name	Data Type	Required	Description
13	prep_method	Text(35)	If available	Laboratory sample preparation method name or description. Must use valid value from std_prep_method table, Appendix 7.14.
14	prep_date	Date	If available	Beginning date of sample preparation in MM/DD/YYYY format.
15	prep_time	Text(5)	If available	Beginning time of sample preparation in 24_hr (military) HH:MM format.
16	leachate_method	Text(15)	Required if Leached	Laboratory leachate generation method name or description. The method name should be sufficient to reflect operation of the laboratory (see analysis method discussion).
17	leachate_date	Date	Required if Leached	Beginning date of leachate preparation in MM/DD/YYYY format.
18	leachate_time	Text(5)	If available	Beginning time of leachate preparation in 24_hr (military) HH:MM format.
19	lab_name_code	Text(10)	Required	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary, see lab valid value table in the appendix.
20	qc_level	Text(10)	Required	May be either "screen" or "quant."
21	lab_sample_id	Text(20)	Required	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).
22	percent_moisture	Text(5)	If available	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is "NN.MM," i.e., 70.1% could be reported as "70.1" but not as "70.1%."
23	subsample_amount	Text(14)	If available	Amount of sample used for test.
24	subsample_amount_unit	Text(15)	If available	Unit of measurement for subsample amount. Must use valid value from units table, Appendix 7.18.
25	analyst_name	Text(30)	Not wanted	Report as null.
26	instrument_id	Text(50)	Not wanted	Report as null.
27	comment	Text(255)	If available	Comments about the test as necessary.
28	preservative	Text(50)	If available	Sample preservative used.
29	final_volume	Text(15)	If available	The final volume of the sample after sample preparation. Include all dilution factors.
30	final_volume_unit	Text(15)	If available	The unit of measure that corresponds to the final_amount.
31	cas_rn	Text(15)	Required	Use values in analyte valid value table, Appendix 7.10.
32	chemical_name	Text(60)	Required	Use the name in the analyte valid value table, Appendix 7.10.
33	result_value	Text(20)	If available	Analytical result reported at an appropriate number of significant digits. May be blank for non_detects.
34	result_error_delta	Text(20)	If available	Error range applicable to the result value; typically used only for radiochemistry results.
35	result_type_code	Text(10)	Required	Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.

<b>Table 4-3. Chemistry test/result file data structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
36	reportable_result	Text(10)	Required	Must be either "Yes" for results which are considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory (only one result should be flagged as reportable).
37	detect_flag	Text(2)	Required	Maybe either "Y" for detected analytes or "N" for non_detects. Use "Y" for estimated (above detection limit but below the quantitation limit) or ">" and "<" for tests such as flash point. Note that "<" must not be used to indicate non_detects (use "N" for non_detects instead).
38	lab_qualifiers	Text(7)	If available	Qualifier flags assigned by the laboratory. Must use valid value from the qualifiers table, Appendix 7.15.
39	validator_qualifiers	Text(7)	If available	Qualifier flags assigned by the validation firm. Must use valid value from the qualifiers table, Appendix 7.15.
40	organic_yn	Text(1)	Required	Must be either "Y" for organic constituents or "N" for inorganic constituents.
41	method_detection_limit	Text(20)	not wanted	Report as null.
42	reporting_detection_limit	Text(20)	If available	Concentration level above which results can be quantified with confidence. It must reflect conditions such as dilution factors and moisture content. Required for all results for which such a limit is appropriate. The reporting_detection_limit column must be reported as the sample specific detection limit.
43	quantitation_limit	Text(20)	Not wanted	Report as null.
44	result_unit	Text(15)	Required	Units of measurement for the result. Must use valid value from units table, Appendix 7.18.
45	detection_limit_unit	Text(15)	If available	Units of measurement for the detection limit(s). This field is required if a reporting_detection_limit is reported. Must use valid value from units table, Appendix 7.18.
46	tic_retention_time	Text(8)	Not wanted	Report as null.
47	result_comment	Text(255)	If available	Result specific comments.

### 4.3.2 Chemistry Test/Result with QC Data

The Chemistry test/results file contains data concerning analytical tests performed on samples with quality control data elements. This format is identical to the format of 4.3.1 except additional fields are available for QC data. This format is used only for data providers, mainly EPA contractors, that are submitting quality data elements with their reports. Each Chemistry test/results file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5TRSQ

C\_v1.txt (or .csv)

**Table 4-4. Chemistry test/results with QC data file structure**

<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
1	sys_sample_code	Text(20)	Required	Unique sample identifier. Each sample at a facility must have a unique value, including spikes and duplicates. You have considerable flexibility in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQulS.
2	lab_anl_method_name	Text(35)	Required	Laboratory analytical method name or description. Must use valid value from lab_anl_method_name table, Appendix 7.11.

3	analysis_date	Date	Required	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis as required by EPA.
4	analysis_time	Text(5)	Required	Beginning time of sample analysis in 24_hr (military) HH:MM format. Note that this field, combined with the "analysis_date" field is used to distinguish between retests and reruns (if reported). Please ensure that retests have "analysis_date" and/or "analysis_time" differ from the original test event (and fill out the test_type field as needed).
5	total_or_dissolved	Text(1)	Required	Must be either "D" for dissolved or filtered [metal] concentration, or "T" for everything else.
6	column_number	Text(2)	Not wanted	Report as null.
7	test_type	Text(10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "dilution2," and "dilution3."
8	lab_matrix_code	Text(10)	Required	Code which distinguishes between different type of sample matrix. For example, soil samples must be distinguished from ground water samples, etc. See matrix valid value table in Appendix 7.13. The matrix of the sample as analyzed may be different from the matrix of the sample as retrieved (e.g. leachates), so this field is available at both the sample and test level.
9	analysis_location	Text(2)	Required	Must be either "FI" for field instrument or probe, "FL" for mobile field laboratory analysis, or "LB" for fixed_based laboratory analysis.
10	basis	Text(10)	Required	Must be either "Wet" for wet_weight basis reporting, "Dry" for dry_weight basis reporting, or "NA" for tests for which this distinction is not applicable. The EPA prefers that results are reported on the basis of dry weight where applicable.
11	container_id	Text(30)	Required	Use the container ID for the sample bottle.
12	dilution_factor	Number w/decimal precision up to 7	Required	Effective test dilution factor.

<b>Table 4-4. Chemistry test/results with QC data file structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
13	prep_method	Text(35)	If available	Laboratory sample preparation method name or description. Must use valid value from std_prep_mthd table, Appendix 7.14.
14	prep_date	Date	If available	Beginning date of sample preparation in MM/DD/YYYY format.
15	prep_time	Text(5)	If available	Beginning time of sample preparation in 24_hr (military) HH:MM format.
16	leachate_method	Text(15)	Required if Leached	Laboratory leachate generation method name or description. The method name should be sufficient to reflect operation of the laboratory (see analysis method discussion).
17	leachate_date	Date	Required if Leached	Beginning date of leachate preparation in MM/DD/YYYY format.
18	leachate_time	Text(5)	If available	Beginning time of leachate preparation in 24_hr (military) HH:MM format.
19	lab_name_code	Text(10)	Required	Unique identifier of the laboratory as defined by the EPA. Controlled vocabulary, see lab valid value table in the appendix.
20	qc_level	Text(10)	Required	May be either "screen" or "quant."
21	lab_sample_id	Text(20)	Required	Laboratory LIMS sample identifier. If necessary, a field sample may have more than one LIMS lab_sample_id (maximum one per each test event).
22	percent_moisture	Text(5)	If available	Percent moisture of the sample portion used in this test; this value may vary from test to test for any sample. Numeric format is "NN.MM," i.e., 70.1% could be reported as "70.1" but not as "70.1%."
23	subsample_amount	Text(14)	If available	Amount of sample used for test.
24	subsample_amount_unit	Text(15)	If available	Unit of measurement for subsample amount. Must use valid values from units table, Appendix 7.18.
25	analyst_name	Text(30)	Not wanted	Report as null.
26	instrument_id	Text(50)	Not wanted	Report as null.
27	comment	Text(255)	If available	Comments about the test as necessary.
28	preservative	Text(50)	If available	Sample preservative used.
29	final_volume	Text(15)	If available	The final volume of the sample after sample preparation. Include all dilution factors.
30	final_volume_unit	Text(15)	If available	The unit of measure that corresponds to the final amount.
31	cas_rn	Text(15)	Required	Use values in analyte valid value table, Appendix 7.10.
32	chemical_name	Text(60)	Required	Use the analyte name listed in the analyte valid value table, Appendix 7.10.
33	result_value	Text(20)	If available	Analytical result reported at an appropriate number of significant digits. May be blank for non_detects.
34	result_error_delta	Text(20)	If available	Error range applicable to the result value; typically used only for radiochemistry results.
35	result_type_code	Text(10)	Required	Must be either "TRG" for a target or regular result, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.

**Table 4-4. Chemistry test/results with QC data file structure (continued)**

Pos#	Column Name	Data Type	Required	Description
36	reportable_result	Text(10)	Required	Must be either "Yes" for results which are

considered to be reportable, or "No" for other results. This field has many purposes. For example, it can be used to distinguish between multiple results where a sample is retested after dilution. It can also be used to indicate which of the first or second column result should be considered primary. The proper value of this field in both of these two examples should be provided by the laboratory (only one result should be flagged as reportable).

37	detect_flag	Text(2)	Required	Maybe either "Y" for detected analytes or "N"
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for non\_detects. Use "Y" for estimated (above detection limit but below the quantitation limit) or ">" and "<" for tests such as flash point. Note that "<" must not be used to indicate non\_detects (use "N" for non\_detects instead).

38	Lab_qualifiers	Text(7)	If available	Qualifier flags assigned by the laboratory. Must
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use valid values from qualifier table, Appendix 7.15.

39	validator_qualifiers	Text(7)	If available	Qualifier flags assigned by the validation firm.
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This is a controlled vocabulary column, valid values can be found in the qualifiers table in appendix.

40	organic_yn	'Y' or 'N'	Required	Must be either "Y" for organic constituents or
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"N" for inorganic constituents.

41	method_detection_limit		Text(20)	Not wanted Report as null.
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42	reporting_detection_limit		Text(20)	If available Concentration level above
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which results can be quantified with confidence. It must reflect conditions such as dilution factors and moisture content. Required for all results for which such a limit is appropriate. The reporting\_detection\_limit column must be reported as the sample specific detection limit.

43	quantitation_limit	Text(20)	Not wanted	Report as null.
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44	result_unit	Text(15)	Required	Units of measurement for the result. Controlled
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vocabulary, see Units valid value table in the appendix.

45	detection_limit_unit	Text(15)	If available	Units of measurement for the detection limit(s).
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Controlled vocabulary, see Units valid value table in the appendix. This field is required if a reporting\_detection\_limit is reported.

46	tic_retention_time	Text(8)	Not wanted	Report as null.
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47	result_comment	Text(255)	If available	Result specific comments.
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48	qc_original_conc	Text(14)	Required	The concentration of the analyte in the original
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(unspiked) sample. Might be required for spikes and spike duplicates (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).

49	qc_spike_added	Text(14)	Required	The concentration of the analyte added to the
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original sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).

<b>Table 4-4. Chemistry test/results with QC data file structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
50	qc_spike_measured	Text(14)	Required	The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. Might be required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample (depending on user needs).
51	qc_spike_recovery	Text(14)	Required	The percent recovery calculated as specified by the laboratory QC program. Always required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").
52	qc_dup_original_conc	Text(14)	Required	The concentration of the analyte in the original (unspiked) sample. Might be required for spike or LCS duplicates only (depending on user needs). Not necessary for surrogate compounds or LCS samples (where the original concentration is assumed to be zero).
53	qc_dup_spike_added	Text(14)	Required	The concentration of the analyte added to the original sample. Might be required for spike or LCS duplicates, surrogate compounds, and any spiked and duplicated sample (depending on user needs). Use zero for spiked compounds that were not detected in the sample. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Also complete the qc_spike-added field.
54	qc_dup_spike_measured	Text(14)	Required	The measured concentration of the analyte in the duplicate. Use zero for spiked compounds that were not detected in the sample. Might be required for spike and LCS duplicates, surrogate compounds, and any other spiked and duplicated sample (depending on user needs). Also complete the qc_spike_measured field.
55	qc_dup_spike_recovery	Text(14)	Required	The duplicate percent recovery calculated as specified by the laboratory QC program. Always required for spike or LCS duplicates, surrogate compounds, and any other spiked and duplicated sample. Also complete the qc_spike_recovery field. Report as percentage multiplied by 100 (e.g., report "120%" as "120").
56	qc_rpd	Text(8)	Required	The relative percent difference calculated as specified by the laboratory QC program. Required for duplicate samples as appropriate. Report as percentage multiplied by 100 (e.g., report "30%" as "30").
57	qc_spike_lcl	Text(8)	Required	Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "60%" as "60").
58	qc_spike_ucl	Text(8)	Required	Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage multiplied by 100 (e.g., report "120%" as "120").

<b>Table 4-4. Chemistry test/results with QC data file structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
59	qc_rpd_cl	Text(8)	Required	Relative percent difference control limit. Required for any duplicated sample. Report as percentage multiplied by 100 (e.g., report "25%" as "25").
60	qc_spike_status	Text(10)	Required	Used to indicate whether the spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample.
61	qc_dup_spike_status	Text(10)	Required	Used to indicate whether the duplicate spike recovery was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any spiked and duplicated sample.
62	qc_rpd_status	Text(10)	Required	Used to indicate whether the relative percent difference was within control limits. Use the "*" character to indicate failure, otherwise leave blank. Required for any duplicated sample.

### 4.3.3 Chemistry Batch Data

The Chemistry batch file contains data that relate the individual samples to the batch identifier. This table is normally only required if the data has not been validated. See Section 3.5. This allows EQUIS® to relate laboratory quality control samples with the field samples that were processed and analyzed together. This table has been structured to allow samples to have different batch IDs for the various phases of analysis (e.g., prep, analysis). The majority of samples will only have one batchID assigned by the laboratory. Each Chemistry batch file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5BAT\_

v1.txt (or .csv)

**Table 4-5. Chemistry batch file data structure**

<b>Pos#</b>	<b>Column Name</b>	<b>Data type</b>	<b>Required</b>	<b>Description</b>
1	sys_sample_code	Text(20)	Required	Unique sample identifier. Each sample must have a unique value, including spikes and duplicates. Laboratory QC samples must also have unique identifiers. The laboratory and the EQUIS® Chemistry user have considerable flexibility in the methods they use to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced by EQUIS® Chemistry.
2	lab_anl_method_name	Text(35)	Required	Laboratory analytical method name or description. A controlled vocabulary column, valid values can be found in the appendix in table ab_anl_method_name.
3	analysis_date	Date	If available	Date of sample analysis in MM/DD/YYYY format. May refer to either beginning or end of the analysis as required by EPA.
4	analysis_time	Text(5)	If available	Beginning time of sample analysis in 24_hr (military) HH:MM format. Note that this field, combined with the "analysis_date" field is used to distinguish between retests and reruns (if reported). Please ensure that retests have "analysis_date" and/or "analysis_time" differ from the original test event (and fill out the test_type field as needed).
5	total_or_dissolved	Text(1)	If available	Must be either "D" for dissolved or filtered [metal] concentration, or "T" for everything else
6	column_number	Text(2)	Not wanted	Report as null.
7	test_type	Text(10)	Required	Type of test. Valid values include "initial," "reextract1," "reextract2," "reextract3," "reanalysis," "dilution1," "dilution2," and "dilution3."
8	test_batch_type	Text(10)	Required	Lab batch type. Valid values include "Prep," "Analysis," and "Leach." This is a required field for all batches.

9	test_batch_id	Text(20)	Required	Unique identifier for all lab batches.
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#### • 4.4 Water Level

The Water Level file contains information on water levels measured during sampling activities. It contains 17 fields that can be populated for each water level reading. Each water level file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5GWT

R\_v1.txt (or .csv)

**Table 4-6. Water Level file data structure**

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells in one boring. Code is the same as that used for sys_loc_code if single well, e.g., if sys_loc_code is MW-01 then sys_well_code is MW-01.
3	measurement_date	Date	Required	Date of water level measurement.
4	measurement_time	Time	Required	Time of water level measurement.
5	historical_reference_elev	Number w/decimal precision up to 15	Required	Historical reference value. Used for the elevation of past reference points. Elevation must be in feet.
6	water_level_depth	Number w/decimal precision up to 7	Required	Depth of ground water below datum defined in well table (Table 5-3).
7	water_level_elev	Number w/decimal precision up to 7	If available	Elevation of water level. Elevation must be in feet.
8	corrected_depth	Number w/decimal precision up to 7	If available	Depth of water level after any necessary corrections, e.g., if corrections were necessary to water_level_depth because free product was encountered.
9	corrected_elevation	Number w/decimal precision up to 7	If available	Corrected water level elevation. Elevation must be in feet.
10	measured_depth_of_well	Number w/decimal precision up to 7	If available	The depth below ground surface to the bottom of the well.
11	depth_unit	Text (15)	If available	Use values from unit valid value table, Appendix 7.18. Unit of measure for depths.
12	technician	Text (30)	If available	Name of technician measuring water level
13	dry_indicator_yn	Text (1)	If available	Is the well dry? "Y" for yes or "N" for no.
14	measurement_method	Text (20)	If available	Method used to make water level measurements.
15	batch_number	Text (10)	If available	Batch number of group of measurements.
16	dip_or_elevation	Text (10)	If available	Use either "elevation" or "dip." Use "elevation" if water level measurement is above the datum (i.e., artesian well) or "dip" if water level is below datum.
17	remark	Text (255)	If available	Remark on measurement.

## 5. FORMATS FOR GEOLOGY FILES

This section contains tables that define the file structures for the Geology EDD. The file structures include drilling activity, lithology, well, well construction, geology samples, water level, water table, and down hole point data. The columns marked “Required” must be reported for each row in the file. If they are not reported, the data will not load. The columns marked “If available” should also be reported. If the data are not available, report in the cover letter to the project RPM the data that is not available and the reason why.

Data providers are required to submit all applicable geology files for all monitoring wells installed less than one year from the Initial EDD submittal and for any wells installed in the future. Sites submitting Chemistry EDDs with sample data obtained from existing monitoring wells (wells greater than 1 year old) are *not required* to submit any Geology files. However, it is suggested that geology files be submitted for existing wells if the data are available.

### • 5.1 Drill Activity

The drill activity file contains general information pertaining to the drilling activities resulting from the soil boring. Each drill activity file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5DRA\_

v1.txt (or .csv)

**Table 5-1. Drill activity file data structure**

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported value in the sys_loc_code field of the location file (Table 3-2).
2	drill_event	Text (20)	Required	Used to identify drilling event. Examples of drilling events could be “initial” for initial drilling or “second” for a subsequent drilling at the same sys_loc_code .
3	start_depth	Number w/decimal precision up to 7	If available	The start depth, in feet below ground surface, of the drilling.
4	end_depth	Number w/decimal precision up to 7	If available	End depth, in feet below ground surface of the drilling.
5	start_date	Date	If available	Date drilling began.
6	diameter	Number w/decimal precision up to 7	If available	Diameter of boring.
7	diameter_unit	Text (15)	If available	Must use values from unit valid value table, Appendix 7.18. Unit of measure for diameter.
8	drill_method	Text (50)	If available	Method used to drill boring.
9	fluid	Text (50)	If available	Description of fluid used during drilling.

<b>Table 5-1. Drill activity file data structure (continued)</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
10	viscosity	Text (50)	If available	Viscosity of drilling fluid.
11	hammer_wt	Text (50)	If available	Weight of hammer, in pounds, used for sampling.
12	hammer_fall	Text (50)	If available	Distance of hammer fall during sampling in inches.
13	lift_mechanism	Text (50)	If available	Type of mechanism used to lift hammer.
14	new_yn	Text (1)	If available	Is this a new boring? “Y” for yes or “N” for no.
15	repair_yn	Text (1)	If available	Is this drilling event to repair an existing boring? “Y” for yes or “N” for no.
16	deepen_yn	Text (1)	If available	Is this drilling event to deepen an existing boring? “Y” for yes or “N” for no.
17	abandon_yn	Text (1)	If available	Has the boring been abandoned? “Y” for yes or “N” for no.
18	replace_yn	Text (1)	If available	Is this boring event to replace an existing boring? “Y” for yes or “N” for no.
19	public_yn	Text (1)	If available	Is well being install for a public use? “Y” for yes or “N” for no.
20	purpose	Text (70)	If available	Describe the purpose of the boring event.

## • 5.2 Lithology

The lithology file contains all the lithology data for the borings. It contains 16 fields that can be populated for each lithologic unit. Optional comments can be added to describe a depth specific observation within a lithologic unit. For example, you could describe a soil fracture that was noted at a depth of 15 feet within a clay unit. First completely describe the clay unit in a row of the lithologic file. Then add a row with only the sys\_loc\_code, start\_depth (i.e., depth below ground surface of the fracture) and the remark1 and/or remark2 fields filled. Use the remark1 and/or remark2 fields to fully describe the fracture. All other fields on that line must be reported as null. An unlimited number of optional depth specific remarks can be added for each lithologic unit. Each lithology file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5LTH\_

v1.txt (or .csv)

<b>Table 5-2. Lithology file data structure</b>				
<b>Pos#</b>	<b>Column Name</b>	<b>Data Type</b>	<b>Required</b>	<b>Description</b>
1	sys_loc_code	Text20	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	start_depth	Number w/decimal precision up to 15	Required	The start depth, in feet below ground surface, of the lithologic unit.
3	material_type	Text(40)	If applic-able	The type of material that composes the lithologic unit. Controlled vocabulary, see material list in appendix. Must be used in all cases except when a depth specific comment is being made.
4	geo_unit_code_1	Text(20)	If available	The data providers interpretation of the hydrogeologic unit present at this lithologic unit, e.g., aquifer 1, aquitard 1, aquifer 2, upper clay unit. See Appendix A.21, for example.

5	geo_unit_code_2	Text(20)	If available	Alternate geologic unit grouping. This can be a sub-classification of geologic_unit_code_1 or a layer used for groundwater flow/transport computer modelling that contains the lithologic unit. See Appendix A.21, for example.
6	remark_1	Text(255)	if applic-able	Comment on the lithologic unit.
7	remark_2	Text(255)	if applic-able	Additional comment on the lithologic unit.
8	moisture	Text(1)	If available	Was any moisture detected within the lithologic unit? “Y” for yes or “N” for no.
9	permeable	Text(10)	If available	Description of the permeability of the lithologic unit such as “impervious,” “semi,” “pervious,” or “very.”
10	consolidated_yn	Text(1)	If available	Was lithologic unit consolidated? “Y” for yes or “N” for no.
11	color	Text(20)	If available	Color of the lithologic unit.
12	observation	Text(255)	If available	General field observations of the lithologic unit.
13	consistency	Text(20)	If available	Description of the consistency of the soil such as very soft, soft, firm, hard or very hard.
14	sorting	Text(20)	If available	Geologic description of the grain size distribution of the lithologic unit. Use “poor” for soil with a wide range of particle sizes or “well” for soil with a narrow range of particle sizes.
15	grainsize	Text(20)	If available	Description of grain size.
16	odor	Text(20)	If available	Description of odor from the soil.

### • 5.3 Well

The well file contains general information relating to well installation. Each well file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5WEL\_v1.t

xt (or .csv)

<b>Table 5-3. Well file data structure</b>				
Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Well installation location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells in one boring. Code is the same as that used for sys_loc_code if single well, e.g., if sys_loc_code is MW-01 then sys_well_code is MW-01.
3	well_description	Text(30)	If applic-able	Used for additional well description if necessary.
4	well_owner	Text(30)	If available	Name of entity that owns the well.
5	well_purpose	Text (20)	If available	Purpose of well.
6	well_status	Text (20)	If available	Current status of well.
7	top_casing_elev	Number w/decimal precision up to 15	If available	Elevation of the top of well casing. Elevation must be in feet.
8	datum_value	Number w/decimal precision up to 15	Required	Value of datum used to reference water level measurements. EPA normally uses top of well casing for datum.
9	datum_unit	Text(15)	Required	Must use values from unit valid value table, Appendix 7.18. Unit of measure for the well datum.
10	datum_desc	Text (70)	Required	Description of the datum, such as “top of well casing.”
11	step_or_linear	Text (6)	If available	Use only for re-surveys of well elevations. If a section of the well casing was removed or added use “step” as the value. If nothing was added or removed from the last survey use “linear” as the value.
12	start_date	Date	Required	Date that datum was first used.

13	datum_collect_method	code	Text (2)	If available Use codes in elevation
collection method valid value table, Appendix 7.6. Method used to determine the datum elevation.				
14	depth_of_well	Number w/decimal precision up to 15	If available	Depth below
ground surface of the well bottom.				
15	depth_unit	Text (15)	If available	Must use values from unit valid value table,
Appendix 7.18. Unit of measurement for depth.				
16	depth_measure_method	Text (20)	If available	Method of measuring depth
of well.				
17	stickup_height	Text (8)	If available	Height of casing above ground surface.
18	stickup_unit	Text (15)	If available	Must use values from unit valid value table,
Appendix 7.18. Unit of measure for the stickup height.				
19	sump_length	Text (20)	If available	Length of sump.
20	sump_unit	Text (15)	If available	Must use values from unit valid value table,
Appendix 7.18. Unit of measure for the sump length.				
21	installation_date	Date	If available	Date of well installation.
22	construct_start_date	Date	If available	Date well construction began.
23	construct_complete_date	Date	If available	Date well construction was
completed.				
24	construct_contractor	Text (10)	If available	Name of contractor that installed well.
25	pump_type	Text (20)	If available	Type of pump used at well such as centrifugal,
propeller, jet, helical, rotary, etc.				
26	pump_capacity	Text (6)	If available	Capacity of pump.
27	pump_unit	Text (15)	If available	Must use values from unit valid value table,
Appendix 7.18. Unit of measure for the pump capacity and yield.				
28	pump_yield	Text (6)	If available	The yield of the pump.
29	pump_yield_method	Text (20)	If available	Method used for pump yield.
30	weep_hole	Text (1)	If available	Is there a weep hole? "Y" for yes or "N" for no.

**Table 5-3. Well file data structure (continued)**

Pos#	Column Name	Data Type	Required	Description
31	head_configuration	Text (50)	If available	Description of the well head.
32	access_port_yn	Text (1)	If available	Is there an access port? "Y" for yes or "N" for
no.				
33	casing_joint_type	Text (50)	If available	Type of casing joint such as threaded, flush, or
solvent welded.				
34	perforator_used	Text (50)	If available	Description of well perforation such as slotted,
drilled, or wound.				
35	intake_depth	Number w/decimal precision up to 15	If available	Depth in feet below
ground surface of the well intake.				
36	disinfected_yn	Text (1)	If available	Was well disinfected? "Y" for yes or "N" for no.
37	historical_reference_elev	Number w/decimal precision up to 15	If available	
Historical reference value. Used for the elevation of past reference points. Elevation must be in feet.				
Elevation must be in feet.				
38	geologic_unit_code	Text (20)	If available	Geologic unit in which the well intake is installed.
39	remark	Text (255)	If available	Available for general remarks.

## - 5.4 Well Construction

The well construction file contains information relating to well construction and well segments. Information is required for all well segments within each well, including surface plug, protective casing, well casing, annular backfill, annular seal, screen, and filter pack. In order to obtain the depth of groundwater samples, it is particularly important that the depths of the top and bottom of the well screen be submitted for each well. Each well construction file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5WSG

\_v1.txt (or .csv)

**Table 5-4. Well construction file data structure**

Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the location file either now or during an earlier data submission.
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells in one boring. Code is the same as that used for sys_loc_code if single well, e.g., if sys_loc_code is MW-01 then sys_well_code is MW-01.
3	segment_type	Text(20)	Required	Use descriptions in well construction and materials valid value table, Appendix 7.20. Type of segment within well (e.g., protective casing, well casing, screen, etc.).
4	material_type_code	Text(20)	Required	Use descriptions in well construction and materials valid value table, Appendix 7.20. Material description of well segment.
5	start_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the top of the segment.
6	end_depth	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, of the bottom of the segment.
7	depth_unit	Text(15)	Required	The unit of depth measurements. Units must be feet.
8	inner_diameter	Number w/decimal precision up to 15	If available	The inside diameter of segment.
9	outer_diameter	Number w/decimal precision up to 15	If available	The outside diameter of the segment.
10	diameter_unit	Text(15)	If available	Must use values from unit valid value table, Appendix 7.18. The unit of diameter measurements.
11	thickness	Number w/decimal precision up to 15	If available	Thickness of the well segment.
12	thickness_unit	Text(15)	If available	Must use values from unit valid value table, Appendix 7.18. The unit of measurement for thickness.
13	slot_type	Text(20)	if applic-able	Type of slots such as bridge, shutter, and continuous.
14	slot_size	Number w/decimal precision up to 15	if applic-able	Width of slots.
15	slot_size_unit	Text(15)	if applic-able	Must use values from unit valid value table, Appendix 7.18. The unit of measurement for slot size.
16	perf_length	Number w/decimal precision up to 15	if applic-able	Length of perforated portion of screen.
17	screen_type	Text(15)	if applic-able	Type of screen.
18	material_quantity	Text(20)	If available	Quantity of material used in lbs. Applicable to annular seal/fill material.
19	material_density	Text(20)	If available	Density of the annular seal material in lbs/ft <sup>3</sup> .

20	Remark	Text255	If available	Remarks regarding the segment.
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## - 5.5 Geology Samples

The Geology samples file contains geotechnical sample information. Samples collected for the purpose of analyte analysis should be reported using the Chemistry EDD. Each Geology sample file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5GSM

P\_v1.txt (or .csv)

Table 5-5. Geology samples file data structure				
Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Sample collection location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	geo_sample_code	Text(20)	Required	Unique sample identifier. Considerable flexibility is given in the methods used to derive and assign unique sample identifiers, but uniqueness throughout the database is the only restriction enforced.
3	sample_name	Text(50)	If available	Use to provide a name or description of sample. Does not have to be a unique throughout database.
4	sample_top	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to top of sample.
5	sample_bottom	Number w/decimal precision up to 15	Required	Depth, in feet below ground surface, to bottom of sample.
6	sampling_date	Date	If available	Date sample was collected.
7	sampling_time	Text(5)	If available	Time sample was collected in hh:mm.
8	sample_method	Text(30)	If available	Method used to obtain sample, e.g., split spoon or Shelby tube.
9	material_type	Text(40)	If available	Material type of geologic sample. Must use valid value from geology soil materials table, Appendix 7.19.
10	sample_desc	Text(255)	If available	General description of the sample or sampling activities.
11	geologic_unit_code	Text(20)	If available	Code used to identify the geologic unit of sample.
12	liquid_limit (LL)	Number w/decimal precision up to 7	If available	Liquid limit of sample.
13	plastic_limit (PL)	Number w/decimal precision up to 7	If available	Plastic Limit of sample.
14	shrinkage_limit	Number w/decimal precision up to 7	If available	Shrinkage limit of sample.
15	flow_index	Number w/decimal precision up to 7	If available	Flow index of sample.
16	plasticity_index	Number w/decimal precision up to 7	If available	Plasticity index of sample.
17	activity	Number w/decimal precision up to 7	If available	Activity of sample.
18	E	Number w/decimal precision up to 7	If available	Void ratio of sample.

19	e_max	Number w/decimal precision up to 7	If available	Maximum void ratio of sample.
20	e_min	Number w/decimal precision up to 7	If available	Minimum void ratio of sample.
21	N	Number w/decimal precision up to 7	If available	Porosity of sample.
22	specific_gravity	Number w/decimal precision up to 7	If available	Specific gravity of sample.
23	W	Number w/decimal precision up to 7	If available	Water content of sample.
24	opt_w	Number w/decimal precision up to 7	If available	Optimum water content.
25	S	Number w/decimal precision up to 7	If available	Degree of saturation of the sample.
26	K	Number w/decimal precision up to 7	If available	Hydraulic conductivity of sample.
27	K_unit	Number w/decimal precision up to 7	If available	Use unit valid value table in appendix. Unit of measure for K.
28	unit_wt	Number w/decimal precision up to 7	If available	Unit weight of sample.
29	sat_unit_wt	Number w/decimal precision up to 7	If available	Saturated unit weight.
30	dry_unit_wt	Number w/decimal precision up to 7	If available	Dry unit weight.
31	dry_unit_wt_max	Number w/decimal precision up to 7	If available	Maximum dry unit weight.
32	dry_unit_wt_min	Number w/decimal precision up to 7	If available	Minimum dry unit weight.
33	density_unit	Number w/decimal precision up to 7	If available	Must use values from unit valid value table, Appendix 7.18. Unit of measure for the densities of the sample.
34	rel_density	Number w/decimal precision up to 7	If available	Relative density of sample.
35	rel_compaction	Number w/decimal precision up to 7	If available	Relative compaction of sample.
36	consistency	Text (20)	If available	Description of the consistency of the soil sample such as very soft, soft, firm, hard or very hard.
37	organic_carbon	Number w/decimal precision up to 7	If available	Organic carbon content of sample.
38	organic_carbon_unit	Text (15)	if available	Must use values from unit valid value table, Appendix 7.18. Unit of measurement of organic content.

## - 5.6 Water Level

The Water Level file contains information on water levels measured from the soil borings or wells. It contains twelve fields that can be filled in for each water level reading. This file is to be submitted once with the initial geology files. All recurring water level information should be submitted with the Chemical files using the proper file name described in Section 4.

Each Water Level file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5GWT

R\_v1.txt (or .csv)

<b>Table 5-6. Water Level file data structure</b>				
Pos#	Column Name	Data Type	Required	Description
1	sys_loc_code	Text(20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	sys_well_code	Text(20)	Required	Code used to differentiate between multiple wells in one boring. Code is the same as that used for sys_loc_code if single well, e.g., if sys_loc_code is MW-01 then sys_well_code is MW-01.
3	measurement_date	Date	Required	Date of water level measurement.
4	measurement_time	Time	Required	Time of water level measurement.
5	historical_reference_elev	Number w/decimal precision up to 15	Required	Historical reference value. Used for the elevation of past reference points. Elevation must be in feet.
6	water_level_depth	Number w/decimal precision up to 7	Required	Depth of ground water below datum defined in well table (Table 5.3).
7	water_level_elev	Number w/decimal precision up to 7	If available	Elevation of water level. Elevation must be in feet.
8	corrected_depth	Number w/decimal precision up to 7	If available	Depth of water level after any necessary corrections, e.g., if corrections were necessary to water_level_depth because free product was encountered.
9	corrected_elevation	Number w/decimal precision up to 7	If available	Corrected water level elevation. Elevation must be in feet.
10	measured_depth_of_well	Number w/decimal precision up to 7	If available	The depth below ground surface to the bottom of the well.
11	depth_unit	Text (15)	If available	Must use values from unit valid value table, Appendix 7.18. Unit of measure for depths.
12	technician	Text (30)	If available	Name of technician measuring water level.
13	dry_indicator_yn	Text (1)	if available	Is the well dry? "Y" for yes or "N" for no.
14	measurement_method	Text (20)	if available	Method used to make water level measurements.
15	batch_number	Text (10)	If available	Batch number of group of measurements.
16	dip_or_elevation	Text (10)	If available	Use either "elevation" or "dip." Use "elevation" if water level measurement is above the datum (i.e., artesian well) or "dip" if water level is below datum.
17	remark	Text (255)	If available	Remark on measurement.

## • 5.7 Water Table

The water table file stores data pertaining the water table. Each water table file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5TBL\_

v1.txt (or .csv)

<b>Table 5-7. Water table file data structure</b>				
Pos#	Column Name	Data Type	Required	Description
1	Sys_loc_code	Text (20)	Required	Soil boring or well installation location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	type	Text (20)	Required	Aquifer designation such as unconfined1, confined1, or confined2.
3	sequence	Text (20)	Required	Designation of when water level measurement was taken. For example, measurement before water stabilized would be "unstabilized" and after stabilization would be "stabilized."

4	depth	Number w/decimal precision up to 15	Required	Depth of water table, in feet, below reference point.
5	flowing_yn	Text (1)	If available	Is the water table flowing? “Y” for yes or “N” for no.
6	measurement_method	Text (50)	If available	Method of measuring water table depth.
7	capped_pressure	Number w/decimal precision up to 15	If available	Hydrostatic pressure of confined aquifer.
8	capped_pressure_unit	Text (15)	If available	Use values from Unit valid value table. Unit of measure for capped pressure.
9	reference_point	Text (50)	If available	Description of reference point from which depth were measured.
10	reference_elevation	Number w/decimal precision up to 15	Required	The reference point elevation. Elevation must be in feet.
11	temperature	Number w/decimal precision up to 15	If available	Temperature of water in the water table.
12	temperature_unit	Text (15)	If available	Must use values from unit valid value table, Appendix 7.18. Unit of temperature.

## • 5.8 Geology Down Hole Point Data

The Geology down hole point data file stores data from down hole logging methods such as Cone Penetrometer Tests and geophysics. All down hole logging data should be submitted. Report the parameter being measured in the “param” field, such as resistivity, and report the measured value at the depth of the measurement. Table 5-8 presents the file structure and Table 5-9 gives an example a down hole point file ready to be converted to a text file. Each Geology down hole point data file must be named according to the following convention:

SiteNameDate.EPAIDCode.EPAR5DHP\_

v1.txt (or .csv)

**Table 5-8. Geology Down Hole Point File Data Structure**

Pos#	Column Name	Data Type	Required	Description
1	Sys_loc_code	Text20	Required	Sample collection location. Must be a valid code for the facility and reported in the sys_loc_code field of the location file (Table 3-2).
2	Depth	Number w/decimal precision up to 15	Required	Depth of measurement below ground surface in feet.
3	Param	Text(20)	Required	The parameter being measured such as tip stress, resistivity, or pore pressure.
4	param_value	Number w/decimal precision up to 15	Required	The measured value of the parameter.

**Table 5-9. Example of down hole point data file**

Sys_loc_code	Depth	Param	Param_Value
MW01	10.8	Tip Stress	612
MW01	11.2	Tip Stress	624
MW01	10.8	Sleeve Stress	6.1
MW01	11.2	Sleeve stress	5.8

MW02	9.5	Resistivity	510
MW02	10.1	Resistivity	521
MW02	11.0	Resistivity	889

## **6. TECHNICAL SUPPORT**

EPA Region 5 provides technical support for users of this EDD. For questions concerning data, data formats, and submission procedures please contact X at Y. For questions relating to the quarterly groundwater modeling program, please contact your site RPM.

